# Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

# Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

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### List of Acronyms and Abbreviations

% percent μm micrometers

ABS activity-based sampling

BNSF Railway Company

CB&I Federal Services, LLC

cc-1 per cubic centimeter

CDM Smith CDM Federal Programs Corporation

CH chrysotile CHISQ Chi-square

DQA data quality assessment DQO data quality objective

ED exposure duration

EDD electronic data deliverable EDS energy dispersive spectroscopy

EF exposure frequency

EPA U.S. Environmental Protection Agency
ESAT Environmental Services Assistance Team

ET exposure time

FSDS field sample data sheet

ID identification

ISO International Organization for Standardization

IUR inhalation unit risk

L liters

LA Libby amphibole

mm<sup>2</sup> square millimeters

MP mile post

NAM non-asbestos material

NFG National Functional Guidelines

NVLAP National Voluntary Laboratory Accreditation Program

OA other amphibole asbestos fibers

OUs operable units
OU6 Operable Unit 6

PCM phase contrast microscopy

PCME phase contrast microscopy-equivalent

QA quality assurance

QATS Quality Assurance Technical Support

QC quality control

RBC risk based concentration
RfC reference concentration

ROW right-of-way

s/cc structures per cubic centimeter
SAED selected area electron diffraction
SAP sampling and analysis plan
Site Libby Asbestos Superfund Site
SOP standard operating procedure

TAS target analytical sensitivity

TEM transmission electron microscopy

### 1 INTRODUCTION

### 1.1 Site Background

Libby is a community in northwestern Montana located 7 miles southwest of a vermiculite mine that operated from the 1920s until 1990. The mine began limited operations in the 1920s and was operated on a larger scale by the W.R. Grace Company from approximately 1963 to 1990. Studies revealed that the vermiculite from the mine contains amphibole-type asbestos, referred to as Libby amphibole (LA).

Epidemiological studies revealed that workers at the mine had an increased risk of developing asbestos-related lung disease (McDonald *et al.* 1986, 2004; Amandus and Wheeler 1987; Amandus *et al.* 1987; Whitehouse 2004; Sullivan 2007). Additionally, radiographic abnormalities were observed in 17.8 percent (%) of the general population of Libby including former workers, family members of workers, and individuals with no specific pathway of exposure (Peipins *et al.* 2003; Whitehouse *et al.* 2008; Antao *et al.* 2012; Larson *et al.* 2010, 2012a, 2012b). Although the mine has ceased operations, historical or continuing releases of LA from mine-related materials could be serving as a source of ongoing exposure and risk to current and future residents and workers in the area. The Libby Asbestos Superfund Site (Site) was listed on the U.S. Environmental Protection Agency (EPA) National Priorities List in October 2002.

For long-term management purposes, the Site has been divided into eight operable units (OUs). OU6 is the designation for BNSF Railway Company (BNSF)-owned property (**Figure 1-1**) that may have been impacted by the loading and hauling of asbestos-contaminated vermiculite or processed Zonolite® shipped on the BNSF line through approximately 1990, the date of the mine closure. OU6 is roughly centered on Libby, Montana (Mile Post [MP] 1319.5) and extends east to approximately MP 1301 and west to approximately MP 1341.

#### 1.2 Document Purpose

Historic mining, milling, and processing operations, as well as bulk transfer of mining-related materials, tailings, and waste to locations throughout the Kootenai Valley, are known to have resulted in releases of vermiculite and LA-containing wastes to the environment. Much of the ore produced by the mine was transported by rail to vermiculite processing areas within and outside of Libby and insulation distributors outside of Libby. During transport, the BNSF railyard and right-of-way (ROW) may have become contaminated with LA through spillage during rail car loading and transit.

Asbestos fibers in source materials are typically not inherently hazardous, unless the asbestos is released from the source material into air where it can be inhaled (EPA 2008). If inhaled, asbestos fibers can increase the risk of developing lung cancer, mesothelioma, pleural fibrosis, and asbestosis. Potential hazards at OU6 consist of the disturbance of source materials (e.g.,

ROW soil) during rail maintenance activities or during recreational/trespassing activities, such as hiking along the railroad tracks. Thus, railroad workers that perform maintenance work within OU6 and the general public who trespass or recreate on or near the ROW have the potential to be exposed to LA during source disturbance activities, and these inhalation exposures may pose a risk of cancer and/or non-cancer effects.

The evaluation of risks to humans from exposure to asbestos is most reliably achieved by the collection of data on the level of asbestos in breathing zone air during disturbance of asbestos source materials, referred to as "activity-based sampling" (ABS) (EPA 2008). BNSF performed outdoor ABS in September 2008 (EMR Inc. 2010a, b) to measure the concentration of LA released into air during railroad maintenance activities along the OU6 rail corridor. This ABS study was designed to evaluate potential exposures to BNSF workers and the general public. The worker scenario simulated two types of railroad workers: a general laborer performing duties on the track as part of larger group of workers and workers operating machinery with an open air cab. Two types of public exposure scenarios were planned: on-looker trespassers and pedestrian trespassers; however, due to manpower limitations during the actual ABS, the two trespasser scenarios were essentially the same.

The BNSF air monitoring samples provide data representative of railroad workers performing typical maintenance activities, and for public receptors (e.g. on-lookers, trespassers) along a 30 mile stretch of OU6. All samples were analyzed for asbestos by transmission electron microscopy (TEM) utilizing International Organization for Standardization (ISO) Method 10312:1995(E) counting and recording rules (ISO 1995). However, results for these samples are limited because more than half of all air samples collected and analyzed during the original ABS study did not achieve the target analytical sensitivity (TAS)1 of 0.001 per cubic centimeter (cc-1) specified in the Rail Maintenance Public Receptor Activity-Based Sampling and Analysis Plan (SAP) (ENSR/AECOM 2008). The TAS specified in the SAP was derived based on a worker exposure scenario and utilizing the asbestos inhalation unit risk (IUR) (EPA 2008). More recently, the EPA has proposed new cancer and non-cancer toxicity values that are specific to LA<sup>2</sup>. These are draft values that are currently undergoing review. Because the proposed LAspecific non-cancer reference concentration (RfC) is very low, the TAS needed to support reliable risk management decisions based on the RfC are much lower than those originally specified in the original SAP. Therefore, selected BNSF outdoor ABS air monitoring samples were re-analyzed to a lower TAS to support an evaluation of potential exposure and risks using the LA-specific toxicity values.

The purpose of this document is to summarize the results of these supplemental analyses.

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<sup>&</sup>lt;sup>1</sup> See Section 3.2.3 for more information on the calculation of analytical sensitivity.

<sup>&</sup>lt;sup>2</sup> http://www2.epa.gov/region8/libby-asbestos-proceedings-may-3-2011-public-meeting

### 1.3 Document Organization

In addition to this introduction, this report is organized into the following sections:

- Section 2 This section summarizes data management procedures and results documentation.
- Section 3 This section summarizes the design of the study, and describes the data that were collected in this study, the analytical methods used for estimating the level of LA in personal air samples, as well as the data reduction methods utilized in this report.
- Section 4 This section summarizes the results for data that were collected as part of this study, and presents a comparison of the TEM re-analysis results to the original TEM results.
- Section 5 This section presents the results of the data quality assessment, including a summary of program audits, modifications, data verification efforts, an evaluation of quality control (QC) samples, and a data adequacy assessment.
- Section 6 This section provides full citations for all analytical methods, site-related documents, and scientific publications referenced in this document.

All referenced tables and figures are provided at the end of this document. All referenced appendices are provided electronically.

### 2 DATA MANAGEMENT

### 2.1 Sample Collection, Documentation, Handling, and Custody

All samples evaluated in this study were ABS air samples previously collected by BNSF in OU6; no new samples were collected during this study. Additional sample documentation and chain of custodies for the transfer of original samples to the analytical laboratory are provided in **Appendix A**. Air samples analyzed during this study were selected and documented as specified in the *OU6 Outdoor ABS Supplemental TEM Analysis Recommendations Memorandum* (CDM Smith 2013).

All selected samples were identified at the time of collection with unique sample identification (ID) numbers that included a program-specific prefix of "BA-" (e.g., BA-00011), which indicate these were air samples collected as part of the  $\underline{\mathbf{B}}$ NSF  $\underline{\mathbf{A}}$ BS investigation.

#### 2.2 Analytical Results Recording

Standardized data entry spreadsheets (electronic data deliverables, or EDDs) have been developed specifically for the Libby project to ensure consistency between laboratories in the presentation and submittal of analytical data. In general, a unique EDD has been developed for each analytical method and each medium. Each EDD provides the analyst with a standardized laboratory bench sheet and accompanying data entry form for recording analytical data. The data entry forms contain a variety of built-in QC functions that improve the accuracy of data entry and help maintain data integrity. These spreadsheets also perform automatic computations of analytical input parameters (e.g., sensitivity, dilution factors, and concentration), thus reducing the likelihood of analyst calculation errors. The EDDs generated by the laboratories are uploaded directly into the Libby site database (see Section 2.4).

### 2.3 Hard Copy Data Management

No hard copy field sample data sheets (FSDSs) or field logbooks were generated as part of this re-analysis effort (because no new samples were collected). Copies of the chain of custody forms for the transfer of original samples to the analytical laboratory are included in the laboratory reports provided in **Appendix A.** 

All hard copy analytical bench sheets are scanned and included in the analytical laboratory job reports. These analytical reports are submitted to the Libby laboratory coordinator (i.e., EPA's Environmental Services Assistance Team [ESAT] contractor, TechLaw, Inc.) and stored electronically. **Appendix A** of this report provides copies of all the analytical laboratory reports for TEM analyses performed as part of this study.

#### 2.4 Electronic Data Management

Detailed information regarding electronic data management procedures and requirements can be found in the *EPA Data Management Plan for the Libby Asbestos Superfund Site* (EPA 2012a). In brief, sample and analytical electronic data are stored and maintained in the Libby Scribe project databases that are housed on a local computer located at the TechLaw office in Golden, Colorado, which is backed up daily to an external hard drive. Raw data summarized in this report were downloaded from Scribe.NET on 11/18/2013, into a Microsoft Access® database by CDM Smith. A frozen copy of this Access database is provided in **Appendix B** of this report.

Because data for the Libby project are maintained in multiple Scribe projects (e.g., analytical data are managed in annual projects, field information is managed in a project separate from the analytical information), the data have been combined into one Access database reflecting a compilation of tables from multiple Scribe projects. Any changes made to these Scribe projects since this download will not be reflected in the Access database.

#### 3 OUTDOOR AIR RE-ANALYSIS

As discussed previously, the goal of this ABS study was to evaluate potential exposures of railroad workers and the general population (i.e., pedestrian trespassers and on-looker trespassers) to LA in air as a consequence of outdoor disturbance activities occurring during railroad maintenance along the OU6 railroad corridor. Personal air samples, stationary air samples, and soil samples were collected during the 7-day ABS event conducted from September 17 to 25, 2008.

As discussed above, prior to 2011, ABS studies were designed to meet analytical requirements based on the IUR for asbestos provided in the *Framework for Investigating Asbestos-Contaminated Superfund Sites* (EPA 2008). More recently, the EPA has provided draft LA-specific cancer and non-cancer toxicity values; the draft values are currently undergoing review. Because the proposed LA-specific RfC is very low, the TAS requirements required to support reliable risk calculations are much lower than those originally specified in the original SAP (ENSR/AECOM 2008). Rather than collect new ABS air samples, a subset of the samples previously collected during the 2008 ABS event were selected for re-analysis by TEM to achieve a better analytical sensitivity. The sample selection criteria and re-analysis methods are presented in CDM Smith (2013) and described in greater detail below.

#### 3.1 Study Design

#### 3.1.1 Sample Selection Criteria

Multiple selection criteria were applied in choosing which BNSF samples to re-analyze. These selection criteria are summarized below.

Types of Monitoring Samples

Experience at Libby and at other asbestos sites has demonstrated that personal air samples are more representative of breathing zone exposures and tend to have higher concentrations of LA than stationary monitor air samples, especially if the person is engaged in an activity that disturbs asbestos source materials (EPA 2007). Thus, this evaluation focuses on personal ABS air samples.

Personal air monitoring samples were collected for workers for the duration of a planned maintenance activity at each location (ENSR/AECOM 2008), which was estimated to last from two to four hours. However, because pump flow rates were reduced during the actual ABS event, the sampling event duration was increased from four to eight hours. Because the goal of this study was to obtain data that would be relevant to support estimates of exposures that could result from maintenance activities in the ROW, these samples were considered appropriate for re-analysis.

#### Types of Disturbance Activities

ABS air samples were selected to represent a range of potential outdoor disturbance activities, including low intensity disturbances (e.g., trespasser pedestrian) and high intensity disturbances (e.g., general laborer removing track and disturbing ballast materials).

#### Representativeness

The goal of the human health risk assessment is to evaluate risks based on current conditions, as well as expected future conditions (i.e., not past conditions). The outdoor ABS samples collected in 2008 were determined to be representative of exposure conditions that are reasonably expected to be present in OU6 at the time of the study (2008) and under present conditions. This conclusion is based on the fact that in general cleanup actions within OU6 were completed prior to 2008. As such, the 2008 outdoor ABS air samples are likely to be representative of conditions that could reasonably be encountered by current and future workers and the general public within OU6.

#### Target Analytical Sensitivity

All original ABS samples were analyzed for asbestos by TEM in accordance with ISO 10312:1995(E) counting and recording rules (ISO 1995). Because all ABS air samples collected in the 2008 study were non-detect (i.e., no asbestos structures were observed during the original analysis), it is important to be sure that the analytical sensitivity is adequate to support reliable decision-making with respect to the new LA-specific toxicity values.

The level of analytical sensitivity needed to ensure that an air sample analysis will be adequate is derived by finding the concentration of LA in air that might be of potential concern, and then ensuring that if an air sample were encountered that had a true concentration equal to that level of concern, it would be quantified with reasonable accuracy. The original TAS specified in the SAP (ENSR/AECOM 2008) was derived based on a BNSF worker exposure scenario and utilized the asbestos IUR (EPA 2008). The TAS specified in the SAP was 0.001 cc<sup>-1</sup>. Although no LA structures were observed in any ABS air sample collected, more than half of all air samples did not achieve the original TAS.

A memorandum prepared by CDM Smith (CDM Smith 2013) described the process that was used to derive the revised TAS needed to support decision-making with respect to the new LA-specific toxicity values. In brief, risk-based concentrations (RBCs) were calculated for cancer and non-cancer exposures using site-specific exposure assumptions for BNSF workers, pedestrian trespassers, and on-looker trespassers. The worker scenario simulated two types of railroad workers: a laborer performing duties on the track as part of larger group of workers and a worker operating machinery with an open air cab. The pedestrian trespasser scenario was to represent potential exposures when railway maintenance activities were not occurring while the

on-looker trespasser scenario was to represent exposures in areas where maintenance activities were occurring. The TAS was then determined by dividing the lower of the RBCs (cancer or non-cancer) by the target number of structures (set equal to 3 for this evaluation<sup>3</sup>). The following table summarizes the exposure parameter assumptions used to derive the revised TAS for each exposure population of interest for OU6 and the resulting TAS:

Exposure Population	Exposure Time [ET] (hours/day)	Exposure Frequency [EF] (days/year)	Exposure Duration [ED] (years)	Revised TAS (cc <sup>-1</sup> )		
Worker	8 (a)	60 <sup>(a)</sup>	50 (a,c)	0.0004		
Pedestrian Trespasser	<b>4</b> (a)	60 (b)	50 (a,c)	0.0009		
On-looker Trespasser	2 (a)	60 (b)	15 <sup>(b)</sup>	0.006		

<sup>(</sup>a) As provided in the original ABS SAP (ENSR/AECOM 2008)

#### 3.1.2 Sample Candidate Selection

The selection criteria described above and in the governing SAP were used to query the Libby project databases (i.e., Scribe project databases) for candidate BNSF ABS air samples. Thirty-five candidate ABS air samples were identified. Based on the revised TAS specified in the table above, and in review of the achieved analytical sensitivities for the personal ABS air samples, supplemental TEM analysis was deemed necessary for 22 out of the 35 ABS air samples including:

- all (14) of the worker samples, and
- 8 of 14 pedestrian trespasser samples.

None of the on-looker trespasser samples were selected for supplemental TEM analysis.

**Table 3-1** presents the list of selected ABS samples to be re-analyzed to achieve a lower analytical sensitivity.

-

<sup>(</sup>b) Assumed based on professional judgment

<sup>(</sup>c) Assumes individual is also a Libby resident

<sup>&</sup>lt;sup>3</sup> In setting the target number of structures to 3, this ensures that there is a 95% probability that an analysis that achieves the TAS will observe at least 1 structure if the true air concentration is equal to the RBC.

### 3.2 Sample Re-Analysis

#### 3.2.1 Analysis Method

The original BNSF air filter was used to prepare ten new grids for TEM analysis using the grid preparation techniques described in Section 9.3 of ISO 10312:1995(E) (ISO 1995). The resulting grids were analyzed for asbestos in basic accordance with ISO 10312 counting and recording rules, as modified by the most recent versions of Libby Laboratory Modifications<sup>4</sup> LB-000016, LB-000029, LB-000066, LB-000067, and LB-000085.

All samples were examined using counting protocols for recording phase contrast microscopy-equivalent (PCME) structures only<sup>5</sup> (per ISO 10312 Annex E). That is, filters were examined at a magnification of about 5,000x, and all amphibole structures (including not only LA but all other amphibole asbestos types as well) that have appropriate selective area electron diffraction (SAED) patterns and energy dispersive spectroscopy (EDS) spectra, and meet PCME counting rules were recorded on the Libby-specific TEM laboratory bench sheets. If observed, chrysotile was recorded in accordance with ISO 10312 recording procedures.

When a sample is analyzed by TEM, the analyst records the size (length, width) and mineral type of each individual asbestos structure that is observed. Mineral type is determined by inspecting SAED patterns and EDS spectra, and each structure is assigned to one of the following four categories:

LA Libby-class amphibole. Structures having an amphibole SAED pattern and an EDS elemental composition similar to the range of fiber types observed in ores from the Libby mine (Meeker *et al.* 2003). This is a solid solution series of minerals including winchite and richterite, with lower amounts of tremolite, magnesio-arfvedsonite, magnesio-riebeckite, and edenite/ferro-edenite. Depending on the valence state of iron, some minerals may also be classified as actinolite.

**OA** Other amphibole-type asbestos fibers. Structures having an amphibole SAED pattern and an EDS elemental composition that is not similar to fiber types from the Libby mine. Examples include crocidolite, amosite, and anthophyllite. There is presently no evidence that these fibers are associated with the Libby mine.

CH Chrysotile fibers. Structures having a serpentine SAED pattern and an elemental composition characteristic of chrysotile. There is presently no evidence that these fibers are associated with the Libby mine.

<sup>&</sup>lt;sup>4</sup> Copies of all Libby Laboratory Modifications are available in the Libby Lab eRoom.

<sup>&</sup>lt;sup>5</sup> Exposure estimates used in risk assessment are compared to toxicity values that are derived from phase contrast microscopy (PCM) analyses; thus, TEM results must be reported based on PCME air concentrations.

**NAM** Non-asbestos material. These may include non-asbestos mineral fibers such as gypsum, glass, or clay, and may also include various types of organic and synthetic fibers derived from carpets, hair, etc. *Recording of NAM structures was not required for this study.* 

The specific preparation and analytical requirements associated with this supplemental evaluation are detailed in the *OU6 Outdoor Supplemental TEM Analysis Recommendations Memorandum* (CDM Smith 2013) and summarized in an analytical requirements summary sheet [SUPPABSOU6-0413] maintained on the Libby Lab eRoom.

#### 3.2.2 Counting and Stopping Rules

Because of the high number of grid openings that were needed to achieve the target analytical sensitivity, all air samples were examined using counting protocols for recording PCME structures only (per ISO 10312 Annex E) as described above. PCME structures are defined as those structures having a length > 5 micrometers ( $\mu$ m), a width  $\geq$  0.25  $\mu$ m, and an aspect ratio (length:width)  $\geq$  3:1.

Three analysis stopping rules were followed to ensure that the results for the TEM analysis of BNSF samples were adequate to support decision-making. The basis for each stopping rule was presented in the *OU6 Outdoor Supplemental TEM Analysis Recommendations Memorandum* (CDM Smith 2013). The TEM stopping rules for this study were as follows:

- 1. Examine a minimum of two grid openings from each of two grids.
- 2. Continue examining grid openings until one of the following is achieved:
  - a. The receptor-specific TAS is achieved (worker 0.0004 cc<sup>-1</sup>, pedestrian trespasser 0.0009 cc<sup>-1</sup>).
  - b. 25 PCME LA structures have been observed.
  - c. A total filter area of 10 square millimeters (mm²) has been examined (this is approximately 1,000 grid openings).

When one of these criteria was satisfied, the TEM analyst completed the examination of the final grid opening and ended the analysis. For all samples included in this supplemental analysis, the analyst stopped when the TAS was achieved.

#### 3.2.3 Calculation of Air Concentration

The concentration of asbestos in air, expressed as PCME structures per cubic centimeter of air (s/cc), is given by:

$$C_{air} = N \cdot S$$

where:

 $C_{air}$  = Air concentration (PCME s/cc)

N = Number of PCME asbestos structures observed

S = Analytical sensitivity (cc<sup>-1</sup>)

For air, the analytical sensitivity is calculated as:

$$S = EFA / (GOx \cdot Ago \cdot V \cdot 1000 \cdot F)$$

where:

S = Analytical sensitivity (cc<sup>-1</sup>)

EFA = Effective area of the filter (mm<sup>2</sup>)

GOx = Number of grid openings examined

Ago = Area of a grid opening  $(mm^2)$ 

V = Volume of air passed through the filter (liters [L])

1000 = Conversion factor (cc/L)

F = Fraction of primary filter deposited on secondary filter (indirect preparation only)

Note that air samples with a count of zero (and hence a concentration of zero) are reported as zero. When computing the best estimate of the mean, samples with a count of zero are evaluated as zero, not at  $\frac{1}{2}$  the analytical sensitivity (EPA 2008). This approach yields an unbiased estimate of the true mean that does not depend on the analytical sensitivity of the samples included in the data set.

#### 4 RESULTS

**Table 4-1** presents a summary of the detailed TEM supplemental analysis results for each selected ABS sample, as well as the original TEM results for each sample. Detailed analytical results for both TEM analyses (original and supplemental) are provided in the project database (see **Appendix B**). An interpretation of these results is provided below.

Note that an evaluation of potential exposures and human health risks based on these results is beyond the scope of this document. These results have been evaluated and presented in a *Draft Risk Calculation Memorandum for the Human Health Risk Assessment* prepared by TRC Inc. (TRC Inc. 2013) for BNSF. The risk characterization presented in this memorandum will be reviewed by the EPA and ABS results for OU6 will be evaluated as part of the site-wide human health risk assessment.

#### 4.1 Evaluation of TEM Results

In September 2008, an ABS event occurred for the purpose of characterizing air and soil conditions due to railroad maintenance activities along the OU6 rail corridor. Personal air samples were collected representative of BNSF workers (general laborers and machine operators) and public receptors/trespassers along a 30 mile stretch of OU6 (MP 1312 to 1341). Workers engaged in a variety of soil disturbance activities, including intensive track maintenance activities (e.g., removing and replacing tracks and ballast) that were expected to result in higher airborne concentrations of LA if present. A total of 35 ABS personal air samples were collected. LA structures were not observed in any of the air samples in the original analysis of these samples; however, over half of the air samples analyzed did not achieve the original TAS (**Table 4-1**).

In 2013, 22 of the 35 personal ABS air samples were re-analyzed to achieve a lower (better) analytical sensitivity. As shown in **Table 4-1**, no LA structures were observed in any personal air sample during the re-analysis effort. The revised TAS was achieved for all 22 samples that were re-analyzed (in some cases, an even better analytical sensitivity than required was achieved).

### 4.2 Comparison of Original and Re-analysis PCME Air Concentrations

As noted above, there were no observed LA structures in the 35 personal air samples collected and analyzed for LA by TEM as part of the September 2008 ABS event along the OU6 rail corridor. In addition, no LA structures were observed in the supplemental TEM analyses for 22 of the original 35 samples performed in 2013, confirming the original results.

### 5 DATA QUALITY ASSESSMENT

Data quality assessment (DQA) is the process of reviewing existing data to establish the quality of the data and to determine how any data quality limitations may influence data interpretation (EPA 2006a,b).

Because no new field samples were collected during this study, no field quality assurance/quality control (QA/QC) activities were performed as part of this study (i.e., no field audits were conducted or field QC samples collected). The following sections describe only laboratory QA/QC procedures and overall data quality for these results.

### 5.1 Laboratory QA/QC

#### 5.1.1 Laboratory Audits

Laboratory audits are conducted to evaluate laboratory personnel to ensure that samples are handled and analyzed in accord with the program-specific documents and analytical method requirements (or approved Libby laboratory modification forms) to make certain that analytical results reported are correct and consistent. All aspects of sample handling, preparation, and analysis are evaluated. If any issues are identified, laboratory personnel are notified and retrained as appropriate.

A series of laboratory audits was performed in May-September of 2012 with follow-up audits performed in 2013 to evaluate all of the Libby laboratories. Detailed audit findings for each laboratory audited in 2012 are documented in separate laboratory-specific audit reports (Shaw Environmental & Infrastructure Group [Shaw E&I] 2012a-g). No critical deficiencies were noted during the 2012 laboratory audits that would be expected to impact data quality for TEM analyses. A summarization of the findings of the 2013 follow-up audits is currently pending.

#### 5.1.2 Laboratory QC Evaluation

The Libby-specific QC requirements for TEM analyses of asbestos are patterned after the requirements set forth by the National Voluntary Laboratory Accreditation Program (NVLAP). In brief, there are three types of laboratory-based QC analyses for TEM – laboratory blanks, recounts, and repreparations. Detailed information on the Libby-specific requirements for each type of TEM QC analysis, including the minimum frequency rates, selection procedures, acceptance criteria, and corrective actions are provided in the most recent version of Libby Laboratory Modification LB-000029.

CDM Smith performed a cursory review of two recount analyses associated with the supplemental analysis effort, which showed that the recount analysis results were consistent with the supplemental analysis results. However, laboratory QC analyses are evaluated by the EPA Quality Assurance Technical Support (QATS) contractor (CB&I) on a program-wide basis rather than on an investigation-specific basis. The rationale for this is that the number of laboratory QC samples directly related to this study is too limited to draw meaningful conclusions regarding overall data quality. A program-wide QA/QC summary report, covering all samples collected and analyzed in 2013 will provide information regarding program-wide data quality for the TEM analytical laboratories. Interpretation of the data quality is subject to change upon completion of this report.

Although the data summarized in this report were not included in the most recent QA/QC summary report (CB&I 2013) the overall conclusions of the QA/QC summary report are likely relevant to this dataset. Based on the QC data that have been collected at the Libby site and reviewed as part of CB&I (2013) report, it was concluded that:

- Blank samples (e.g., lot blanks, field blanks, preparation blanks, laboratory blanks) show that inadvertent contamination of field samples with LA or other forms of asbestos is not of significant concern, in the field or at the analytical laboratory.
- For TEM, there is generally good concordance for intra-laboratory analyses. However, there are differences in methods or procedures between analytical laboratories and corrective action may be useful in achieving better agreement and reducing discrepancies due to analytical procedure differences. In addition, increasing the frequency of inter-laboratory analyses will help identify differences as they arise over time.

#### 5.2 Data Verification and Validation

#### 5.2.1 Data Verification

The Libby Scribe project databases have a number of built-in QC checks to identify unexpected or unallowable data values during upload into the database. Any issues identified by these automatic upload checks were resolved by consultation with the analytical laboratory before entry of the data into the database. After entry of the data into the database, several additional data verification steps were taken to ensure the data were recorded and entered correctly.

In order to ensure that the database accurately reflects the original hard copy documentation, all data downloaded from the database were examined to identify data omissions, unexpected values, or apparent inconsistencies. In addition, 10% of all analytical results underwent a

<sup>&</sup>lt;sup>6</sup> A recount analysis examines a subset of the same grid openings that were examined during the original analysis to ensure reproducibility of the reported TEM structure counts and attributes (length, width, mineral type).

detailed verification. Asbestos data verification involves comparing the data for a sample in the database to information on the original hard copy analytical bench sheets for that sample. In addition, the sampling information for the air pump was verified (i.e., start/stop times, start/stop flow rates) to ensure that the resulting sample air volume was correct.

**Appendix** C presents a detailed summary of the findings of the data verification efforts for this investigation. In brief, two TEM analyses were reviewed in accordance with standard operating procedure (SOP) EPA-LIBBY-09 as part of the data verification effort. The two samples consisted of one directly prepared filter and one indirectly prepared filter. There were no critical<sup>7</sup> issues identified during the TEM verification effort. One non-critical discrepancy was identified during the TEM verification, in which the incorrect lab job number was recorded on the benchsheet for the direct preparation sample.

In addition to performing a detailed TEM analysis verification effort, pump information in Scribe were reviewed to confirm the calculated sample air volume. No issues were identified.

All issues identified during the data verification effort were submitted to the analytical laboratory for resolution and rectification. All tables, figures, and appendices (including all hard copy documentation and the database [provided in **Appendix A** and **Appendix B**, respectively]) generated for this report reflect corrected data.

#### 5.2.2 Data Validation

Unlike data verification, where the goal is to identify and correct data reporting errors, the goal of data validation is to evaluate overall data quality and to assign data qualifiers, as appropriate, to alert data users to any potential data quality issues.

Data validation is performed by the EPA QATS contractor (CB&I), with support from technical support staff that are familiar with investigation-specific data reporting, analytical methods, and investigation requirements. For the Libby project, data validation of TEM results is performed in basic accordance with Libby-specific SOPs developed based on the draft *National Functional Guidelines (NFG) for Asbestos Data Review* (EPA 2011).

The EPA QATS contractor prepares an annual summary of the program-wide assessment of QA/QC. This annual addendum provides detailed information on the validation procedures performed and provides a narrative on the quality assessment for each type of analysis (e.g., TEM), including the data qualifiers assigned and the reason(s) for these qualifiers to denote when results do not meet acceptance criteria. This annual summary details any deficiencies, required corrective actions, and makes recommendations for changes to the QA/QC program to address any data quality issues.

<sup>&</sup>lt;sup>7</sup> A critical discrepancy is defined as an issue that could influence the reported sample concentration or sample identification information.

The validation of data analyzed in 2013 (including the OU6 supplemental TEM analyses) will be included in the next program-wide QA/QC summary report. The current report completed in November 2013 covers samples collected and analyzed in 2010-2012 (CB&I 2013). Interpretation of the data quality is subject to change upon completion of the report covering samples analyzed in 2013. However, changes are not anticipated to be significant since fewer than 0.5% of the results were flagged as a result of the validation of samples collected and analyzed in 2010-2012.

#### 5.3 Data Adequacy Evaluation

A comparison of the data collected with the data quality objectives (DQOs) as summarized in the governing SAP (ENSR/AECOM 2008) or governing memorandum (CDM Smith 2013) is presented below.

#### 5.3.1 Spatial and Temporal Representativeness

The spatial and temporal goals of this study were to collect data within OU6 that would be representative of current and future conditions that BNSF workers and the general public could potentially encounter within OU6. The samples selected for re-analysis as part of this study were originally collected in various locations within OU6 in September 2008 (**Figure 1-1**), which are considered to be representative of current (and future) conditions within OU6. Sampling locations sampled in 2008 were based on the planned track maintenance areas for the day and included six areas west of Libby spanning the length of OU6 starting about 8 miles west of Libby and continuing for about 20 miles (MP 1329.5, 1331, 1331.5, 1337, 1339.5, 1341). In addition one area about 7.5 miles southeast of Libby (MP 1312) was sampled. Thus, this study accomplished the spatial and temporal objectives set forth in the governing SAP.

#### 5.3.2 Sample Completeness

Completeness is defined as the fraction of samples that were planned that were successfully completed and analyzed. As described previously, a total of 22 samples were selected for reanalysis by TEM in this study. All 22 samples were able to be successfully analyzed and achieved the revised TAS (or better). Thus, sample completeness was 100%. The available reanalysis data along with the results for original analyses are deemed adequate and considered sufficient to characterize disturbance activities for the purposes of supporting exposure estimates for OU6 in the site-wide human health risk assessment.

#### 5.3.3 Confirmation of Analysis Stopping Rules

All supplemental TEM analyses were performed in accordance with the analytical methods specified in the governing memorandum (see Section 3.2.2 for a review of these requirements). All 22 completed analyses were stopped upon achieving the specified TAS, one of the three

specified stopping rules (see Section 3.2.2 and **Appendix C**, **Attachment 1A**). The revised TAS of 0.00040 cc<sup>-1</sup> (or better) was achieved for the 14 worker samples re-analyzed. The revised TAS of 0.00090 cc<sup>-1</sup> (or better) was achieved for the 8 pedestrian trespassers/on-looker samples re-analyzed. Therefore, the TEM results for all the air re-analyses met the analytical requirements set forth in the governing memorandum.

#### 5.3.4 Filter Loading

The TEM analysis of filters generated from air samples examines only a small portion of the total filter. For the purposes of computing concentration in the associated sample, it is assumed that the filter is evenly loaded. The assessment of filter loading evenness is evaluated using a Chi-square (CHISQ) test, as described in ISO 10312 Annex F2 (ISO 1995). If a filter fails the CHISQ test for evenness, the reported result may not be representative of the true concentration in the sample, and the results should be given low confidence. An evaluation of filter loading for the ABS air samples from this study showed that, since no structures were observed in any analysis, all filters passed the CHISQ test for evenness. Thus, it is concluded that uneven filter loading is not of significant concern for the air samples analyzed in this study.

#### 5.3.5 Air Filter Preparation Methods

For four of the selected ABS air samples that were analyzed by TEM, the filter required the use of an indirect preparation method due to high particulate loading on the filter (see **Table 4-1**). These samples were all worker ABS air samples collected during high-intensity disturbance activities.

For chrysotile asbestos, indirect preparation can increase structure counts up to 1,000-fold due to dispersion of bundles and clusters (Hwang and Wang 1983; Chesson and Hatfield 1990; HEI-AR 1991; Breysse 1991). For amphibole asbestos, the effects of indirect preparation are generally much smaller (Bishop *et al.* 1978; Sahle and Laszlo, 1996; Harris 2009). A Libby-specific evaluation of the effect of indirect preparation on reported LA air concentrations shows that indirect preparation does increase reported concentrations, but the ratio of the indirect preparation concentration to the direct preparation concentration is usually within a factor of about 2-3 for PCME LA (Berry *et al.* 2014, Goldade & O'Brien 2014). This relative insensitivity of PCME LA concentration estimates to preparation method is likely due to the fact that complex LA structures (e.g., bundles, compact clusters) that might be subject to dispersal during an indirect preparation are rarely present in most Libby air samples.

Because no asbestos fibers were observed in any of the air samples, the analysis of samples for LA using an indirect preparation method is not a source of uncertainty.

### 5.4 Conclusions

Based on a review of each of these data quality metrics, it is concluded that the TEM results for the OU6 ABS samples re-analyzed as part of this study are of adequate quality to support their intended use.

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# Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

# Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

**TABLES** 

Table 3-1
Summary of Selected ABS Samples for Supplemental TEM Analysis

					Air				Number
		Preparation	Target	Achieved	Sample				of GOs
Receptor	Sample ID	Method	Sensitivity	Sensitivity	Volume	F-Factor	EFA	Area of GO	Analyzed
			(cc <sup>-1</sup> )	(cc <sup>-1</sup> )	(liters)		(mm²)	(mm²)	
	BA-00011	Direct	0.0024	0.00233	706	1	385	0.013	18
	BA-00012	Direct	0.0024	0.00239	687	1	385	0.013	18
	BA-00021	Direct	0.0024	0.00231	988	1	385	0.013	13
	BA-00022	Direct	0.0024	0.00224	1016	1	385	0.013	13
	BA-00029	Direct	0.0024	0.00235	1145	1	385	0.013	11
	BA-00030	Direct	0.0024	0.00235	1145	1	385	0.013	11
Railroad	BA-00047	Direct	0.0024	0.00233	1154	1	385	0.013	11
Worker	BA-00048	Direct	0.0024	0.00231	1165	1	385	0.013	11
	BA-00058	Direct	0.0024	0.00232	510	1	385	0.013	25
	BA-00059	Direct	0.0024	0.00236	501	1	385	0.013	25
	BA-00001	Indirect	0.0024	0.00211	1344	0.25	360	0.013	35
	BA-00002	Indirect	0.0024	0.00426	1333	0.125	360	0.013	39
	BA-00037	Indirect	0.0024	0.00769	739	0.125	360	0.013	39
	BA-00038	Indirect	0.0024	0.00319	890	0.25	360	0.013	39
	BA-00032	Direct	0.0024	0.000974	780	1	385	0.013	16
	BA-00033	Direct	0.0024	0.00115	658	1	385	0.013	19
	BA-00040	Direct	0.0024	0.00237	780	1	385	0.013	16
Trespasser	BA-00041	Direct	0.0024	0.00229	718	1	385	0.013	18
Pedestrian	BA-00050	Direct	0.0024	0.0023	806	1	385	0.013	16
	BA-00051	Direct	0.0024	0.0022	791	1	385	0.013	17
	BA-00061	Direct	0.0024	0.00235	630	1	385	0.013	20
	BA-00062	Direct	0.0024	0.00234	602	1	385	0.013	21

EFA = Effective filter area

GO = Grid opening

cc<sup>-1</sup>= per cubic centimeter

mm<sup>2</sup> = square millimeters

Table 4-1
Summary of TEM Results for OU6 ABS Samples Selected for Supplemental Analysis

San	nple Informat	ion				Orig	inal Analysi	is			Supplemental Analysis				Pooled Results [a]			
		Air Sample	Preparation	F-	EFA	Area of	Number	Achieved	Number of	PCME LA	Number of	Achieved		PCME LA Air	Achieved		PCME LA Air	
Sample Type	Sample ID	Volume	Method	Factor	, 2,	GO 2	of GOs	Sensitivity	PCME LA	Air Conc.	GOs	Sensitivity	PCME LA	Conc.	Sensitivity	PCME LA	Conc.	
		(liters)		-	(mm²)	(mm²)	Analyzed	(cc <sup>-1</sup> )	Structures	(s/cc)	Analyzed	(cc <sup>-1</sup> )	Structures	(s/cc)	(cc <sup>-1</sup> )	Structures	(s/cc)	
	BA-00011	706	Direct	1	385	0.013	18	0.0023	0	0	105	0.00040	0	0	0.00034	0	0	
	BA-00012	687	Direct	1	385	0.013	18	0.0024	0	0	110	0.00039	0	0	0.00034	0	0	
	BA-00021	988	Direct	1	385	0.013	13	0.0023	0	0	75	0.00040	0	0	0.00034	0	0	
	BA-00022	1016	Direct	1	385	0.013	13	0.0022	0	0	73	0.00040	0	0	0.00034	0	0	
	BA-00029	1145	Direct	1	385	0.013	11	0.0024	0	0	65	0.00040	0	0	0.00034	0	0	
	BA-00030	1145	Direct	1	385	0.013	11	0.0024	0	0	65	0.00040	0	0	0.00034	0	0	
Railroad	BA-00047	1154	Direct	1	385	0.013	11	0.0023	0	0	65	0.00039	0	0	0.00034	0	0	
Worker	BA-00048	1165	Direct	1	385	0.013	11	0.0023	0	0	65	0.00039	0	0	0.00033	0	0	
	BA-00058	510	Direct	1	385	0.013	25	0.0023	0	0	146	0.00040	0	0	0.00034	0	0	
	BA-00059	501	Direct	1	385	0.013	25	0.0024	0	0	148	0.00040	0	0	0.00034	0	0	
	BA-00001	1344	Indirect	0.25	360	0.013	35	0.0021	0	0	210	0.00039	0	0	0.00033	0	0	
	BA-00002	1333	Indirect	0.125	360	0.013	39	0.0043	0	0	420	0.00040	0	0	0.00036	0	0	
	BA-00037	739	Indirect	0.125	360	0.013	39	0.0077	0	0	760	0.00039	0	0	0.00038	0	0	
	BA-00038	890	Indirect	0.25	360	0.013	39	0.0032	0	0	320	0.00039	0	0	0.00035	0	0	
	BA-00032	780	Direct	1	385	0.013	16	0.0010	0	0	50	0.00076	0	0	0.00043	0	0	
	BA-00033	658	Direct	1	385	0.013	19	0.0012	0	0	55	0.00082	0	0	0.00048	0	0	
	BA-00040	780	Direct	1	385	0.013	16	0.0024	0	0	55	0.00069	0	0	0.00053	0	0	
Trespasser Pedestrian	BA-00041	718	Direct	1	385	0.013	18	0.0023	0	0	50	0.00082	0	0	0.00061	0	0	
	BA-00050	806	Direct	1	385	0.013	16	0.0023	0	0	50	0.00073	0	0	0.00056	0	0	
	BA-00051	791	Direct	1	385	0.013	17	0.0022	0	0	50	0.00075	0	0	0.00056	0	0	
	BA-00061	630	Direct	1	385	0.013	20	0.0024	0	0	53	0.00089	0	0	0.00064	0	0	
	BA-00062	602	Direct	1	385	0.013	21	0.0023	0	0	60	0.00082	0	0	0.00061	0	0	

EFA = Effective filter area

cc<sup>-1</sup> = per cubic centimeter

GO = Grid opening

ID = Identification number

LA = Libby amphibole

mm<sup>2</sup> = square millimeters

PCME = Phase contrast microscopy-equivalent

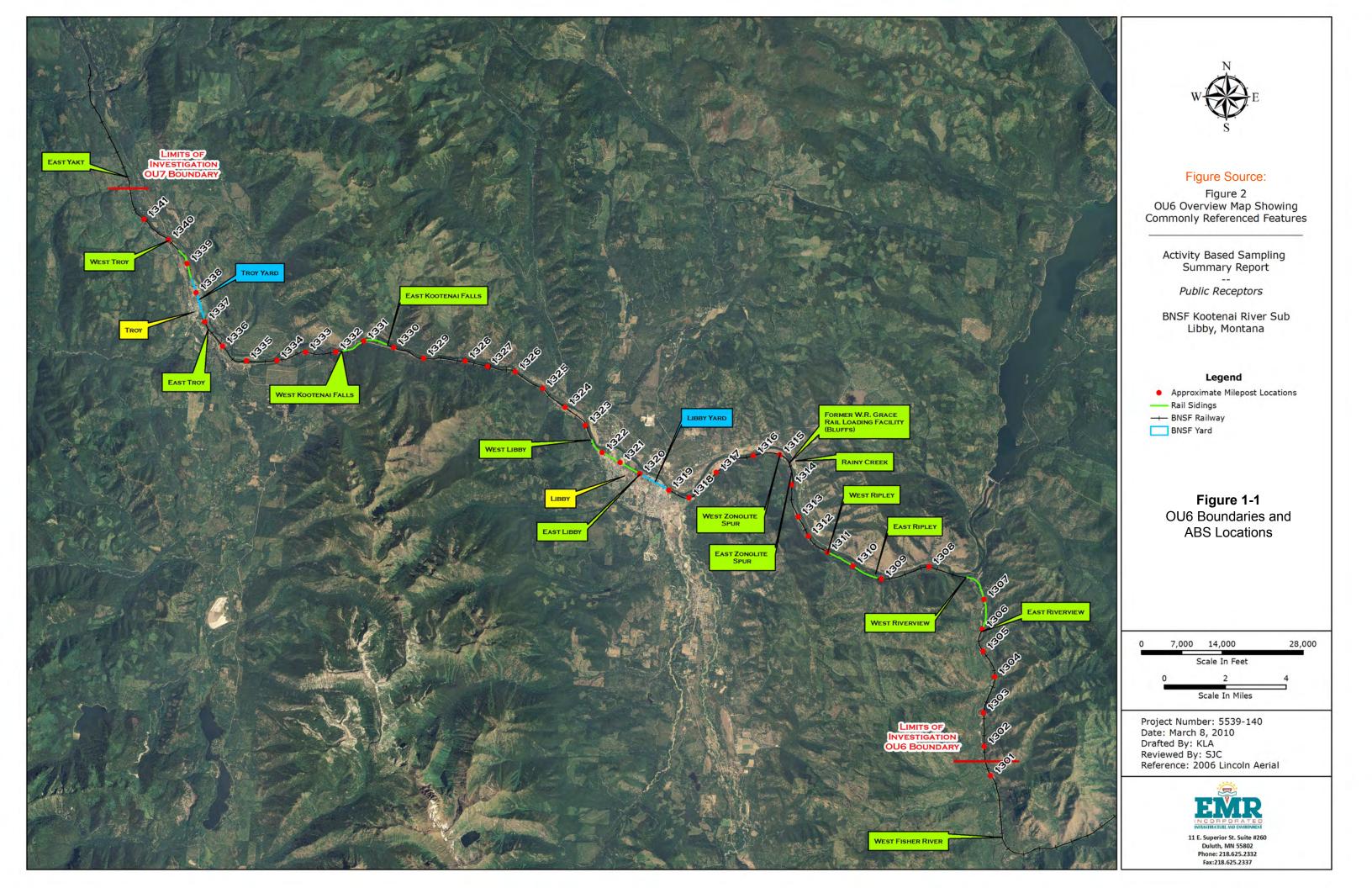
s/cc = structures per cubic centimeter

[a] Pooled concentration is calculated as: Cair =  $\sum$  Number of PCME LA Structures /  $\sum$  (1/Achieved Sensitivity)

# Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

# Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

**FIGURES** 



# Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

# Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

Appendices

# Data Summary Report: Outdoor Activity-Based Sampling Air Re-analysis Results

# Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

Appendix A Analytical Laboratory Reports July 11, 2013

Mr. Doug Kent TechLaw, Inc. ESAT Region 8 16194 W. 45<sup>th</sup> Drive Golden, CO 80403 303-312-7725

RE: SDG Narrative – TEM Analysis by ISO 10312

EMSL Analytical, Inc. Laboratory Order ID: 271300244

Dear Mr. Kent:

Fourteen samples were received by the Libby Lab on May 21, 2013 and signed for by the sample receiving clerk. The samples were assigned to an internal EMSL laboratory order ID number of 271300244. Each sample was assigned a unique, sequential laboratory ID number and the job was entered into the Laboratory Information Management System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL Internal Chain of Custody. Sample condition and signatures are recorded on the original Chain of Custody 0412-003 submitted by TechLaw, Inc.

These samples were analyzed in accordance with TEM ISO 10312: 1995 Ambient Air Determination of Asbestos Fibres Direct Transfer Transmission Electron Microscopy, as modified by lab modifications specific to the Libby Project.

Results were e-mailed to the Libby Distribution Group and uploaded to the FTP site beginning on July 1, 2013. If you have any questions or require additional information, please do not hesitate to contact me at 856-303-2540.

Sincerely,

EMSL Analytical, Inc.

Charles LaCerra

Special Projects Manager

# Chain of Custody Record

271300244

Samples from: Send to: BNSF/Kennedy Jenks Consult TechLaw/ESAT Region 8 Chain of Custody Number 0412-003 4745 1st Avenue South 303 N. 3rd Street Number of Samples 14 SUPPABSOUL-0413 REV.O Duluth, MN 55803 Troy, MT 59935 Analytical Summary Sheet Attention: Andrea Wandler (406) 295-9151 Date Shipped Special Instructions: Samples resubmitted as per EPA request for reanalysis. Samples collected during worker receptor ABS (September, 2008)

Sample ID	Tag	Sample Date	Matrix	Volume (L)	Filter Pore Size (um)	Low Volume Sample ID	Analysis Requested	Turnaround Time (days)	Media Code	Comments
# BA-00001	ALI	09/17/08	Air	1344	0.8		Temr 150	30	Α	
BA-00002	46	09/17/08	Air	1333	0.8		1		Α	
BA-00011	ALI	09/18/09	Air	706	0.8				Α	
₱ BA-00012	ALI	09/18/08	Air	687	0.8				Α	
A BA-00021	ALI	09/19/08	Air	988	0.8				Α	
BA-00022	ALI	09/19/08	Air	1016	0.8				Α	
BA-00029	유니	09/22/08	Air	1145	0.8				Α	
BA-00030	ALI	09/22/08	Air	1145	0.8				Α	
F BA-00037	ALI	09/23/08	Air	739	0.8				Α	
BA-00038	ALI	09/23/08	Air	890	0.8				Α	
BA-00047	ALL	9/24/2008	Air	1154	0.8				A	
₩ BA-00048	ALJ	9/24/2008	Air	1165	8.0				Α	
# BA-00058	AU	9/25/2008	Air	510	0.8	==			Α	
BA-00059	ALI	9/25/2008	Air	501	8.0		4	t	À	
<u></u>	mayor 13									

Relinquished by:	Date:	Time:	Received by:	Date:	Sample Condition:
Ent	4/19/13	1400	Indicallandle	04/25/13	Complete
Relinquished by:	Date:	Time:	Received by:	Date:	Sample Condition:
Q7 Brown Techlow	05/21/13	12:41	Dun Bury Ens	108/21/2	OK ACCEPT

## INTERNAL CHAIN OF CUSTODY

6/19/2013 10:23:13 AM

Order ID: 271300244

Attn:

Fax:

Project:

Doug Kent

TechLaw, Inc.

**ESAT Region 8** 16194 W. 45th Drive

Golden, CO 80403

Phone: (303) 312-7725

0412-003

**BNSF/Kennedy Jenks Samples** 

Samples collected 9./17, 18, 19, 22, 23, 24, 25./2008

Customer ID:

Customer PO:

Received:

05/21/13 12:41 PM

Libby

271300244

TECH25

EMSL Order: EMSL Proj ID:

Cust COC ID

**TEM ISO 10312** Test:

**Matrix** 

Air

Date Date

4 weeks TAT:

Qty:

14

Acct Sts:

N30

Sisprsn: rdemalo

Logged:

kcolberg

**Date:** 5/21/2013

Inter- Lab Sample Transfer

Samples Relinquished:

Samples Received:

Package Mailed to Cinnaminson: KC

Method of Delivery: Felix

Includes: (Circle)

**Penchsheets** Micrographs

Sample Slides **GridBox** 

Sample filters Other

Date 418

Final Package Received:

Date: 7/11/13

Sample

Unacceptable

**Condition:** Comments

Initial Prep (Initials/Lab)

Filter Prep (Initials/Lab): EJWI

Grid Prep (Initials/Lab)

Date:

For Special Projects Use Only:

QC Selection:

**Date Package Review:** Date Package Mailed:

Date:

Date:

Date:

**Special Instructions** 

Order ID	Lab Sample #	Cust. Sample # Location	Due Date
271300244	271300244-0001	BA-00001/85) FAMP WILLIAMS	7/2/2013 5:00:00 PM
271300244	271300244-0002	BA-00002	7/2/2013 5:00:00 PM
271300244	271300244-0003	BA-00011	7/2/2013 5:00:00 PM
271300244	271300244-0004	BA-00012 (5)	7/2/2013 5:00:00 PM
271300244	271300244-0005	BA-00021	7/2/2013 5:00:00 PM
271300244	271300244-0006	BA-00022	7/2/2013 5:00:00 <b>PM</b>
271300244	271300244-0007	BA-00029	7/2/2013 5:00: <b>00 PM</b>
271300244	271300244-0008	BA-00030 2713-LIB-56 (A-T)	7/2/2013 5:00:00 PM ), 2713-LIB-57 (A-I)

## **INTERNAL CHAIN OF CUSTODY**

6/19/2013 10:23:14 AM

Order ID: 271300244

Attn:

Doug Kent

TechLaw, Inc.

**ESAT Region 8** 16194 W. 45th Drive

Golden, CO 80403

Customer PO:

Customer ID: TECH25

Received:

05/21/13 12:41 PM

Fax:

Phone: (303) 312-7725

EMSL Order:

271300244

Libby

EMSL Proj ID:

0412-003

**BNSF/Kennedy Jenks Samples** 

Samples collected 9./17, 18, 19, 22, 23, 24, 25./2008

**Cust COC ID** 

Test: TEM	ISO 10312	<u>Matrix</u> Air	TAT: 4 weeks	<u>Qty:</u> 14
271300244	271300244-0009	BA-00037		7/2/2013 5:00:00 PM
271300244	271300244-0010	BA-00038		7/2/2013 5:00:00 PM
271300244	271300244-0011	BA-00047		7/2/2013 5:00:00 PM
271300244	271300244-0012	BA-00048·		7/2/2013 5:00:00 PM
271300244	271300244-0013	BA-00058,		7/2/2013 5:00:00 PM
271300244	271300244-0014	BA-00059°		7/2/2013 5:00:00 PM

## TEM Asbestos Structure Count -- ISO 10312

<b>EPA Sample Number</b> Tag	BA-00001 AL1	PARAMETERS	
Status	ANALYZED	Effective filter area	360.0 mm2
Lab QC Type	NOT QC	F factor	2.50E-01
Lab Sample Number	271300244-0001	Number of Grid Openings (amphibole)	210
Matrix	Air	Number of Grid Openings (chrysotile)	210
Category	Field	Grid opening area	0.013 mm2
Prep	Indirect - Ashed	Volume (L) or Area (cm2) Sensitivity (amphibole)	1344 L
Analysis Method	TEM-ISO	Sensitivity (amprilipole)	3.92E-04 s/cc
Est. Particulate Loading	12%	Area Examined (amphibole)	3.92E-04 s/cc
		Area Examined (chrysotile)	2.730 mm2
		7 (Ca Examined (CitySollie)	2.730 mm2

Magnifications	LOVA
Magnification:	LOW

Recording	Min AR	Min length (um)	Min width (um)	Stoppina	Target Sens.	May AE (2)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	Max AE (mm²) 10.000	25

COUNTS (based on countable structures only)

		2.0 00.00000000	<u> </u>	
Bin	LA	OA	CH	All Asbestos
Total			11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
PCME	0	0	0	0

### CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

F11	F	MΔ	ME.

0412-003\_BA-00001\_271300244-0001\_TEM-ISO\_AR\_06-19-13\_IA\_NotQC\_C0.xlsm

FILE TYPE: Original

#### Recording Rules:

#### Stopping Rules:

3:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivit
5.0	0	Minimum Length (um)	207	GOs required to reach target
0.25		Minimum Width (um)		Maximum Area Examined (mm²
				GOs required to reach max area
				1

## F-factor Calculation:

1000	reach max area			
25	Maximum # of Structures			
207	Estimated # of GO required			
r used for indire	ect prep or ashing			

Indirect Pr	ep Inputs	
 0.50	Fraction of primary filter	used

0.50	[For dust and dustfall, enter 1.0]
100	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

	1
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

## Input for Ashing of Secondary Filter

Fraction of secon	dary filter	used for	ashing
Fraction of Secon	idary mer	usea ioi	asnın

1.00	
0.25	IF-factor

ì	Grid opening traverse direction:	٧

## Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

# TEM Asbestos Structure Count

LIBBY

Laboratory ID:	EMSL27	•	EPA Sample Number:	BA-00001	Tag	AL1	~	
Instrument ID	OL 100 C	X II (27-	2 Matrix	2 Matrix				
Voltage (KV)	100	,	Air volume (L), du dustfall container	1344				
Magnification (do not include X)	LOV	~	Date received	Date received by lab				
Grid opening area	rid opening area (mm²)			Lab Job Numb	271300244			
Scale: 1L =	1.00	0	Lab Sample N		271300244-0001			
Scale: 1D =		1.00	0	Number of grid	Number of grids prepared			
Primary filter area	(mm²)	385.	0	Prepared by (e.g., M. Smith)			E. Wyatt-Pescado	
Secondary Filter A	360.	0	Preparation date			4/15/2009		
Category	Field	•	EPA COC Nur	nber		0412-0	03	
Filter Status	ANALYZED	•	Estimated Part	ticulate Loadi	ng (%)	12%		

Analyzed by (e.g., M. Smith) E. Wyatt-Pesc									
Analysis date 6/19/2013									
Prep Indirect - Ashed									
If sample type = air, is there loose material or debris in the cowl?	No 🔻								
Analysis Method	TEM-ISO 🔻								
Analysis Method SOP	ISO 10312								
Grid storage location	2713-LIB-56								
Archive filter(s) storage location	ESAT Archive								
Enter the appropriate data in the c calculate the F-factor									
F- factor 0.25									
Lab QC Type	NOT QC								

COMMENTS		
		:
L		

EPA SAMPLE ID: BA-00001 LAB SAMPLE ID: 271300244-0001 ERROR CHECK Matrix Air TEM-ISO Prep Indirect - Ashed
Type NotQC Analysis Method QC Type OK - No errors found Data Entry by (e.g., M. Smith)

B. Galiagher

Data Entry date 6/21/2013 QA by (e.g., M. Smith) M. Smollock

_	Da	ta Entry dat	e 6/21/201	3		7 ()	e.g., M. Smith QA dat	A 7/1/201	13			┨						
Target	Sensitivit	y Reached-	Complete of	current GO	, then sto	0	471 321	0 [77 1720				J						
Grid	Grid Opening	Structure	No. of	Structures	Dimen	sions (a)	Identification		Mineral	Class (b	1)	T	T	Т ———	т			
			Primary	Total	Length	Width	Idenuncation	LA	OA	СН	NAM	Mineral Desc (c)	EDXA	Comments	1 = y	es, blank	= no	CH Not
A1	B1	ND						T'	-	1	147 474	T Desc to	OD5 (a)	Comments	Sketch	Photo	ED\$	Counted (e)
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A1	B9	ND								1	-	·	<del> </del>	<del> </del>			<u> </u>	<u> </u>
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A1	C6	ND						<u> </u>	<del>                                     </del>	· <del> </del>	+	<del> </del>	<del> </del>					
A1	C8	ND						+	1	<del> </del>	+	<del> </del> -	┼──		<del> </del>	<u> </u>		
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A1	D3	ND		10000		8 77 97 3		100	<del> </del>	-	<del> </del>		ļ					
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_ A1	D9	ND						<del> </del>	+	<del> </del>								
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_A1	J3	ND				3.51						-						
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A1	J9	ND				3.5							<del></del>			<u> </u>		
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EPA SAMPLE ID: BA-00001 Matrix Air Prep Indirect - Ashed
LAB SAMPLE ID: 271300244-0001 Analysis Method TEM-ISO QC Type NotQC

Data Entry by (e.g., M. Smith) B. Gallagher QA by (e.g., M. Smith) M. Smollock

Data Entry date 6/21/2013 QA date 7/1/2013 Target Sensitivity Reached-Complete current GO, then stop Grid Structure No. of Structures Grid Dimensions (a) Mineral Class (b) 1 = yes, blank = no
Sketch | Photo | EDS Opening Туре Identification EDXA Primary Length CH Not Width OA CH NAM Desc (c) A3 \_H7 ND A3 Н9 ND A3 12 ND A3 14 ND A3 16 ND A3 18 ND A3 110 ND A3 J1 ND A3 J3 ND A3 J5 ND A3 .17 ND A3 J9 ND A5 Α1 ND A5 A2 ND A5 A3 ND Α5 A4 ND Α5 Α5 ND A5 A6 ND A5 ND Α7 Α5 Α8 ND Α5 Α9 ND A5 A10 ND A5 B1 ND A5 B2 ND A5 B3 ND Α5 B4 ND A5 **B**5 ND A5 B6 ND A5 B7 ND A5 В8 ND A5 B9 ND A5 B10 ND Α5 C1 ND A5 C2 ND A5 C3 ND A5 ND A5 C5 ND A5 C6 ND \_A5 C7 ND A5 C8 ND A5 ND A5 C10 ND A5 D1 ND D2 Α5 ND A5 D3 ND A5 D4 ND A5 D5 ND A5 D6 ND D7 A5 ND Α5 D8 ND A5 D9 ND A5 D10 ND A5 E1 ND A5 E2 ND A5 Ę3 ND A5 E4 ND A5 E5 ND A5 E6 ND A5 E7 ND A5 E8 ND Α5 E9 ND A5 E10 ND A5 F1 ND A5 F2 ND A5 F3 ND A5 F4 ND \_A5 F5 ND A5 F6 ND Α5 F7 ND A5 F8 ND A5 F9 ND A5 F10 ND G1 A5 ND A5 G2 ND Α5 G3 ND Α5 G4 ND Α5 G5 ND Α5 G6 ND A5 G7 ND A5 G8 ND A5 G9 ND A5 G10 A5 H1 ND

EPA SAMPLE ID: BA-00001 LAB SAMPLE ID: 271300244-0001	Matrix Air Analysis Method TEM-ISO	Prep Indirect - Ashed QC Type NotQC	ERROR CHECK  OK - No errors found
Deta Entry by (e.g., M. Smith)  B. Gallagher  Data Entry date 6/21/2013	QA by (e.g., M. Smith) M. Smollock OA date 7/1/2013		

Tanast (	Panaldi da	Chily date	0/2 1/2013			J	QA date	7/1/201	3			j							
raryer:	Sensitivity	Reached-C	ompiete c	urrent GO,	then stop	)	· · · · · · · · · · · · · · · · · · ·												
		Grid Structure		_			Dimensions (a) Identification			Mineral C	lass (b)		Mineral EDXA			1 = yes, blank = no			CH Not
	Opening	Туре	Primary	Total	Length	Width	Identinoadon	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)	
A5	H2	ND			A 7		Marie Land	79.7		8 - 1	· -		1		1	1		Codinted (e)	
A5	НЗ	ND			7.4					1	-		-		<del> </del>	<b></b>	<u> </u>	<del></del>	
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A5	14	ND			E. C 7	1.0	(	3 1 2 2						3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<del> </del>	<u> </u>	-		
A5	15	ND		172	100		X13 - 1, 8 - 1		Tail Land			- 1.A				<del></del>			
A5	16	ND								-		<del></del>			<del></del>	<del></del>			
A5	17	ND			7				<del>                                     </del>		-				ļ				
A5	18	ND																ļ <del></del>	
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A5	110	ND																L	
A5	J1																		
		ND																	
A5_	J2	ND				16 8 Hall 18	A November 1				200								
A5	J3	ND			19.1.74 (14		Aliah Maya Missay	50.50 Salt.		3.57.5	1	- Table 1							
A5	J4	ND	1717 1577	1000	1969/400	2011 To 4000	V-18452	36,190	17.5	40	1.1	7 7 7	100						
A5	J5	ND	14.19 + 7	<i>425</i> 19	1000	434 J. 1977	\$3 0 0 0 W	40.79	111		7 76	19.00							
A5	J6	ND	<u> 4 - 1 - 1</u>		4.5	160 N. S.	Walter Contract	100		91.44			75						
A5	J7	ND	7 5	\$ - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	ar ardigg	74.4.1.51	1.50	14 F 4 S		98 11 15	1.79. 74								
A5	J8	ND	4.1	1000	1 14 19	ere in a	A CONTRACTOR	and the section	1	7				<del></del>					
A5	J9	ND	A		1	4.07	6 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	74.4	1. 27%		-								
A5	J10	ND	1.4	V61 x 100	way.	11/2 11/2				7.0									
Α7	A1	ND	77 77		1 2 3 3 3 3	63-14											·		
A7	A2	ND	- 7 J 7 1 J 5	77.0		W. 507 - 7		3.0	-				3 4 7						
A7	A3	ND			*****	1 Programme			-			22.							
A7	A4	ND			1.1		8 1 1 1 B			100	1 1 1								
A7	A5	ND																	
A7	A6																		
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A7	A7	ND		1	277 2222		\$127.87 3.50	<u> 1</u> 1 1 1 1 1			4. 12.	10 To 10 Av			-				
A7	A8	ND		1 A		427.716	. 47%	V. 1. 2. 1	87.1			1 11 11		V					
_A7	A9	ND	11.72	3.00	200	\$150 P. P. P.	4774 FA SO	3 - 2 TV	4 17 1 1 S	14.00	277	V	71						
A7	A10	ND	1.41.25	14 14 14 19 19 19 19 19 19 19 19 19 19 19 19 19	200 S	74 C	Range William	V F LA	£ 14.7	\$30 Jane		Descript.		A CONTRACTOR SALE	7 7	-			
A7	B1	ND	3 1 2 25			100,000			200		1, 11, 14								
A7	B2	ND		24 4		7.70	811. H 53			300									
A7	B3	ND			7 (1.5)	1 1 1 1		7	48.9	100	<del>9 1</del>				7.5		<del></del>		
_A7	B4	ND		85 J 5	V ( v	7.70	5 (3)	3 14 1 12											
A7	B5	ND	100																
		.,,,,							11 1 1 1 1 1		4.7			and the second s					

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number Tag Status Lab QC Type Lab Sample Number Matrix Category Prep Analysis Method Est. Particulate Loading	BA-00002 AL1 ANALYZED NOT QC 271300244-0002 Air Field Indirect - Ashed TEM-ISO 5%	PARAMETERS Effective filter area F factor Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile) Grid opening area Volume (L) or Area (cm2) Sensitivity (amphibole) Sensitivity (chrysotile) Area Examined (amphibole) Area Examined (chrysotile)	360.0 mm2 1.25E-01 420 420 0.013 mm2 1333 L 3.96E-04 s/cc 3.96E-04 s/cc 5.460 mm2 5.460 mm2
Magnification: LOW		rica Examined (chrysothe)	5.460 mm2

Magnification:	LOW

Recording Min AR Min length (um) Min width (um)  Rules: 3:1 5 0.25 Target Sens. Max AE (mm²) Max N LA  Rules: 0.0004 10.000 25	Recording	Min AR	Min longth (um)	Main middle (				
Rules: 0.0004 10.000 25	_	2.4	wiiii letigut (uiti)		-	Target Sens.	Max AE (mm²)	Max N LA
	Nules.	3.1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

		wie en detares	<u> </u>	
Bin	LA_	OA	CH	All Asbestos
Total			VIII	77 10200100
PCME	0	0	0	0

### CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total			The second section of the section of the second section of the second section of the second section of the section of t	
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

E11	=	NΔ	R.A	E٠

0412-003 BA-00002 271300244-0002 TEM-ISO AR 06-19-13 IA NotQC C0.xlsm

FILE TYPE: Original

Recording Rules:

Stopping Rules:

			otopping itt	iica.
:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity
5.00	0	Minimum Length (um)	416	GOs required to reach target
0.25		Minimum Width (um)	10.000	Maximum Area Examined (mm²)
			770	GOs required to reach max area
-facto	or Ca	alculation:	25	Maximum # of Structures

F-factor Calculation:

rep Inputs

Fraction of primary filter used for indirect prep or ashing

[For dust and dustfall, enter 1.0]

[For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for senal dilution

Second resuspension volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution
 Third resuspension volume (mL)
Volume applied to secondary filter (mL) or used for seria dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

0.125 F-factor

Grid opening traverse direction:

Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

### TEM Asbestos Structure Count

Laboratory ID:	Laboratory ID:				
Instrument ID			OL 100 CX II (2		
Voltage (KV)			100		
Magnification (do not include X)	4,800		LOW		
Grid opening area		0.0130			
Scale: 1L =		1.000			
Scale: 1D =			1.000		
Primary filter area	(mm²)		385.0		
Secondary Filter A		360.0			
Category		Field	•		
Filter Status	AN	ALYZED	•		

EPA Sample Number:	BA-00002	Tag	ALI	•		
Matrix			Air	•		
Air volume (L), du dustfall container		cm²), or	1333	}		
Date received	by lab		5/21/20	13		
Lab Job Numb	per:		271300244			
Lab Sample N	umber:		271300244	271300244-0002		
Number of grid	is prepared		10			
Prepared by (e	e.g., M. Smith	)	E. Wyatt-Pe	E. Wyatt-Pescado		
Preparation da	4/15/20	09				
EPA COC Nun	0412-00	03				
Estimated Part	5%					

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador
Analysis date	6/19/2013
Prep	Indirect - Ashed
If sample type = air, is there loose material or debris in the cowl?	No 🔻
Analysis Method	TEM-ISO 🔻
Analysis Method SOP	ISO 10312
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Enter the appropriate data in the c calculate the F-factor	
F- factor	0.125
Lab QC Type	NOT QC

COMMENTS		
	 ······································	

EPA SAMPLE ID: BA-00002 LAB SAMPLE ID: 271300244-0002	Matrix Air Anelysis Method TEM-ISO	Prep Indirect - Ashed QC Type NotQC	ERROR CHECK OK - No errors found
Data Entry by (e.g., M. Smith)  Data Entry date 6/21/2013	QA by (e.g., M. Smith) M. Smollock		

Target :	⊔at Sensitivitv	Reached-C	6/21/2013	urrent GO	then etc	]	QA date	7/1/201	3			]						
Grid	Grid	Structure	No. of	Structures	Dimen	sions (a)		T	Mineral C	lass (h)		Τ	T	T	1			
	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH		Mineral Desc (c)	EDXA Obs (d)	Comments	1 = y Sketch	es, blank	= no	CH Not Counted (e)
C1	A1 A2	ND ND		1									1 4 4 4 4 4 4			1	1	T Counted (e)
C1	A3	ND			-	<del> </del>	1 1 1 1 1		1									
C1	A4	ND			-							<del> </del>		/-	-	<u> </u>		
C1	A5	ND							1.0			-			1	<del> </del>	-	<del></del>
C1	A6 A7	ND ND	-	-	45 51			7	¥1	S		1.1			T		<del>                                     </del>	<del>                                     </del>
C1	A8	ND	<del> </del>	<del>                                     </del>		-	1	<del> </del>		7.32								
C1	A9	ND						-		75	-				4	ļ <u> </u>		
C1	A10	ND	<u> </u>					ļ	<b>-</b>		-						<del> </del>	<del> </del> -
C1 C1	B1 B2	ND ND	-												<del>†</del>	<del> </del>		<del> </del>
C1	B3	ND	-	<del> </del>					<u> </u>									
C1	B4	ND							-									
C1	B5	ND						40		-	<u> </u>				-			<del> </del>
C1	B6 B7	ND ND	ļ		ļ ·										ļ		<del>                                     </del>	
C1	B8	ND								, ,								
C1	B9	ND	1												<del> </del>			
C1	B10	ND		A 1. 14.19		3, 347, 377			1 1 1 1						<del>                                     </del>			<del> </del>
C1 C1	C1 C2	ND ND	2 2 2 2 2				Service Services	VV. V. A						. 184	<del> </del>			
C1	C2 C3	ND	<del>                                     </del>	1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	8	SAN TAN BURE	1			40.0	2 1 1						
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C1	C10	ND													<del> </del>	,		<del></del>
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C1	D8	ND											7					
C1	D9	ND		4			garanta di Karanga							···	<b>-</b>			
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C1 C1	F9 F10	ND ND								$ \downarrow$								
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			TEMISO	AD 06 10 1	2 14 1-100		DATA ENTRY	L									12	

EPA SAMPLE ID: BA-00002 LAB SAMPLE ID: 271300244-0002 ERROR CHECK Air TEM-ISO Matrix Prep Indirect - Ashed Analysis Method QC Type NotQC OK - No errors found Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/21/2013

Target Sensitivity Reached Complete current GO, the QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

Grid	Sensitivity Grid	Structure	No. of S	Structures	Dimen	sions (a)		T	Minarate					т				
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	<del></del>	Mineral C	lass (b)		Mineral	EDXA		1 = y	es, blan	k = no	СН
C1	14	ND			Longar	AAIOIII		LA.	OA_	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Count
C1	15	ND	<del> </del>	<del> </del>	<del> </del>	<b></b>			<u> </u>		L		_				<del>                                     </del>	1 44411
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	16	ND		1	4 14 4 17	100									<del> </del>	+		<b>_</b>
C1	17	ND				3 37												<b>↓</b>
C1_	18	ND		17.				· · · · · ·		<del></del>								
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C1	l10	ND			<del> </del>			-	ļ			- 9						
C1	Ji	ND	<del>                                     </del>	·	+												+	1
C1					<del> </del>										<del> </del>	+		
	J2	ND		100	1.5			1 1				7 7			+	+		
C1	J3	ND	18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1,100											ļ	<del>                                     </del>	<u> </u>
C1	J4	ND		100					<del> </del>	<del></del>								<u></u>
C1	J5	ND																
C1	_J6	ND						-										1
C1	J7	ND							6 19								1	╁╌
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	J8	ND	1 31 3			**	677 3575		100					***	+	-	+	├
<u>C1</u>	J9	ND	31 Jan 1944		W 1 (44)	v versilit.		17/14/12/1										
C1	J10	ND	Siray Hilly	\$1,780 ES	4.6.1.27	37-30, 1172	J. 18 19 19 19		-						<u> </u>	<u> </u>		<u> </u>
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		ND				A	4.6								<del>                                      </del>	<del></del>	<del> </del>	
_C3	A4	ND				optysky.	¥ 184 1	1 7 9	7						<del> </del>	-	+	<u> </u>
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СЗ	A6	ND	100	300 500			- 1 × 1								<u> </u>			
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C3	A8	ND	1000							11 60	<u> </u>	I		<u> </u>	1			
C3	A9	ND	2.7			25 (56.5%)			1,200	I	100	<u> </u>					<b></b>	Ь——
				<u> </u>	AL 1.366	A Walnut	1408 A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	111	e 2,5 g		1,500	4 1 1 1 2 2 2 1	0 I (		<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del></del>
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C3	B2	ND		27.7				<del></del>										
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C3	B4	ND			<del></del>	<del>, ", , , , ,  </del>								and the second second			╚	
C3	B5	ND		-		<del>- 1 (1</del>							<u> </u>					
C3	B6								1		- 1						<del>                                     </del>	
		ND	<u> </u>	20 - 50 500				200									<del>                                     </del>	_
C3	B7	ND						2.0			11.11				<del></del>			
C3	B8	ND			3 3	N 27 44	40000	7.7										
C3	B9	ND	17 17	1	100													
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СЗ	C1	ND																
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C3	C10									<i>-</i>	4.1	100						
		ND				2.118 (181.03	201.5					1 3		**				
C3	D1	ND		<u> </u>	1 JA		4.259 4.13		7 7		7.00							
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<u>C3</u>	D3 (	ND								-								
C3	D4	ND		J. 194	**************************************	<del>~ ( )</del>												
СЗ	D5	ND											7 1					
C3	D6	ND																
							<u> </u>				7.15							
C3	D7	ND											-				<del></del>	
C3	D8	ND			Street Street				3,7		7 7 1						<b></b>	
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C3	D10	ND		47 (57 5.87	100	ari serit v		<del></del>		<del>- +</del>	-+							
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										T				· · · · · · · · · · · · · · · · · · ·			-	
C3	E4	ND		التنجب				900 P. 1		·		7	<del></del>					
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23	E10	ND	100	-+			25	A				4.5						
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	F1	ND	-	علدنت			1.56,747,54.7		10.0			2, 1						
23	F2	ND			45° - 37 \$	21 April 11	3 3 3 4 3 7	1.70										
23	F3	ND		148 95		3-17 N		- T										
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23	F5	ND		3 p. 1, 5 mgs   10	20 20 70		<del>dalakan P</del>	<del></del>				$-\bot$					T	
3	F6	ND .			<del>- 1</del>	71.70												
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	G5	ND					1. 1. 1. 1. 1.	577 L		<del></del>		<del>  </del>						
3															l l	- 1	-13	
3	G6	ND					DATA ENTRY 2											

EPA SAMPLE ID: BA-00002 LAB SAMPLE ID: 271300244-0002 ERROR CHECK Air TEM-ISO Matrix [ Prep Indirect - Ashed
QC Type NotQC Analysis Method OK - No errors found Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date
6/21/2013 QA by (e.g., M. Smith) M. Smollock

Composition   Property   P	GNO .	Grid	Reached-C Structure	No of S	Structures	Dime-	ringe /=\	Γ						,					
3			Type					Identification	· <del>                                      </del>	Mineral	Class (b)		Mineral	EDXA		1 = y	es, blank	= no	СН
C3	C3	G7			13.0	Lengui	AAIGIII			, OA	L CH	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Cour
C3   S10   NO	C3				1000					+	<del> </del>			<u> </u>					
CS   GO   NO	СЗ			- "					-		+	-							
Col.		G10		1.5		1	77			-	-	40.00		ļ					
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C3 HM NO C5 HS NS				1000	2 L				+	-	-	<del></del>			<u> </u>				
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C3   12   NO					7/1		74 7 7 7 7 7				-								
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C3							<u> </u>		1			s. 77				1			╁─
C3					347 - 4 3	7		4.65	430 739	oxdot		100	2.12			1			<del>                                     </del>
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C3									1 1977			3.0			· · · · · · · · · · · · · · · · · · ·	1	<del>  </del>		├
C3						$\vdash$										-			<del>  -</del> -
C3						$\vdash$		<b>A</b>								1	<del>                                     </del>		
C3																	<del>                                     </del>		
G3						1000				JAAL B		. %	4 T		7 T. S.	$\top$			
C3 JF ND C3 J9 ND C3 J9 ND C3 J9 ND C4 L9 ND C5 J9 ND C5					3 336	100,000		1, 11, 25, 77		- 18	3 3/3								
C3 JB ND					43 - AT 1 15 AT 1 - AT 1	2 12 Daniel .		979 8 D T 3 P		100		1 6 6 1					<del></del>		
C3 J9 ND ND							2000	yg we Tyv		124						1			
C3 3/0 ND								23 Aug 3	194	223						1		-	
CS A1 NO				4 3		I										+	+		
CS A2 ND	<u>C5</u>					<u> </u>					3 5 7				· · · · · · · · · · · · · · · · · · ·	<del>  </del>			
CS A3 ND				. 20.24	2000		1y* 14 s.	1 103			7		7.7	-+		+			
CS A4 ND CS A4 ND CS A5 ND CS				4	4.3	477 15	45.50	<u> </u>		7.1		1000		<del></del>		+	<u>}</u>		
CS A5 ND				5 5 5 50			<u> </u>	45.00	132 mg 2		1,000			+	· · · · · · · · · · · · · · · · · · ·	+			
CS C6 ND				21 1	A. Zimi	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<u> </u>	Strain State	\$1, 1 Au		-			+					
CS C7 ND C						1000	1.7	and the state			1	~ <u> </u>			<del></del>	+			
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C5 C9 ND							S. 197				- $+$				· · · · · · · · · · · · · · · · · · ·	<del>                                     </del>			
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C5         D1         ND           C5         D2         ND           C5         D3         ND           C5         D4         ND           C5         D4         ND           C5         D6         ND           C5         D7         ND           C5         D8         ND           C5         D9         ND           C5         D9         ND           C5         D9         ND           C5         D9         ND           C5         D10         ND           C5         E1         ND           C5         E2         ND           C5         E3         ND           C5         E4         ND           C5         E4         ND           C5         E4         ND           C5         E6         ND           C5         E7         ND           C5         E8         ND           C5         E8         ND           C5         E8         ND           C5         E7         ND           C5         E7         ND					72,555	77777	3 27	g Sangara Tara		7,7 %			$ \downarrow$					I	
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C5         D9         ND           C5         D10         ND           C5         E1         ND           C5         E2         NO           C5         E3         ND           C5         E3         ND           C5         E4         ND           C5         E6         ND           C5         E7         ND           C5         E7         ND           C5         E7         ND           C5         E8         ND           C5         E9         ND           C5         E7         ND           C5         E7         ND           C5         F1         ND           C5         F2         ND           C5         F3         ND           C5         F4         ND           C5         F5         ND           C5         F5         ND           C5         F5         ND				3. 9.3			-+									I			
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C5 E2 ND					<del>  </del>						-								
C5       E3       ND         C5       E4       ND         C5       E6       ND         C5       E6       ND         C5       E7       ND         C5       E7       ND         C5       E9       ND         C5       E10       ND         C5       F1       ND         C5       F2       ND         C5       F3       ND         C5       F3       ND         C5       F4       ND         C5       F5       ND         C5       F6       ND         C5       F7       ND         C5       F7       ND         C5       F9       ND         C5       F9       ND         C5       F10       ND         C5       G1       ND         C5       G3       ND         C5       G5       ND         C5       G6       ND         C5       G8       ND         C5       G8       ND										$ \perp$									
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C5         E6         ND           C5         E7         ND           C5         E8         ND           C5         E9         ND           C5         E9         ND           C5         E10         ND           C5         F1         ND           C5         F2         ND           C5         F3         ND           C5         F4         ND           C5         F5         ND           C5         F5         ND           C5         F6         ND           C5         F7         ND           C5         F8         ND           C5         F8         ND           C5         F8         ND           C5         F9         ND           C5         F10         ND           C5         G2         ND           C5         G6         ND <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td><math>\longrightarrow</math></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										$\longrightarrow$									
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25       E8       ND   <					9778.3	<del>- 4-4-4</del>	3 - 293 1 1 3 W (1704 1				-		1,14,14						
25       E9       ND         25       E10       ND         25       F1       ND         25       F2       NO         25       F3       ND         25       F3       ND         25       F4       ND         25       F5       ND         25       F6       ND         25       F7       ND         25       F8       ND         25       F9       NO         25       F9       ND         25       F10       ND         25       G1       ND         25       G2       ND         25       G3       ND         25       G3       ND         25       G4       ND         25       G6       ND         25       G6       ND         25       G6       ND         25       G8       ND         25       G8       ND				77777		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1944 (1944) 1944 (1944)	100 S V10 S		- 244									
25       E10       ND         25       F1       ND         25       F2       ND         25       F3       ND         25       F4       ND         25       F5       ND         25       F6       ND         25       F7       ND         25       F8       ND         25       F8       ND         25       F9       ND         25       F9       ND         25       F10       ND         25       G1       ND         25       G2       ND         25       G3       ND         25       G4       ND         25       G5       ND         25       G6       ND         25       G8       ND         25       G8       ND         25       G8       ND         25       G8       ND         25       G9       ND				$\overline{}$	<del></del>		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		+		4		1.8.5						
C5       F1       ND       ND         C5       F2       ND       ND         C5       F3       ND       ND         C5       F4       ND       ND         C5       F5       ND       ND         C5       F7       ND       ND         C5       F8       ND       ND         C5       F9       ND       ND         C5       F10       ND       ND         C5       G2       ND       ND         C5       G3       ND       ND         C5       G4       ND       ND         C5       G6       ND       ND         C5       G6       ND       ND         C5       G8       ND       ND								20 N N N N N N N N N N N N N N N N N N N					***						
C5       F2       ND       Image: ND </td <td></td> <td></td> <td></td> <td>- 1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>45</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				- 1								45							
C5 F3 ND							<del></del>			$-\bot$						- '-			
25       F4       ND       ND         25       F5       ND       ND         25       F6       ND       ND         25       F7       ND       ND         25       F8       ND       ND         25       F9       ND       ND         25       G1       ND       ND         25       G2       ND       ND         25       G3       ND       ND         25       G4       ND       ND         25       G6       ND       ND         25       G8       ND       ND         25       G8       ND       ND						<del></del>				-									
25 F5 ND																		$\neg +$	
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25 F9 ND				-+	-+	-+								$\perp \perp$					
25 F10 ND				-+		<del></del>						- 177							
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25 G5 ND												2 .					_		
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5 G8 ND 144								1 83.50				11.0		- 1	· · · · · · · · · · · · · · · · · · ·		-+		
5 G9 ND 14						3070 17		( ) V					7			<del></del>		-+	
2   G9   ND   1/2	~ I			- 44			3.5	. 1755 to 4										<del>-</del>  -	
			ND L.				15 15							-+				14	

QA date 7/1/2013 Target Sensitivity Reached-Complete current GO, then stop. No. of Structures Dimensions (a) Mineral Class (b)
OA CH NAM 1 = yes, blank = no
Sketch | Photo | EDS Opening Identification Mineral EDXA Type Primary CH Not Total Length Width Obs (d) C5 G10 ND C5 H1 ND C5 H2 ND C5 НЗ ND H4 ND C5 H5 ND Н6 ND Ç5 H7 ND C5 H8 ND <u>C5</u> Н9 ND C5 H10 ND C5 11 ND C5 12 ND C5 13 ND C5 14 ND C5 15 ND C5 16 ND C5 17 ND C5 18 ND C5 19 ND C5 110 ND J1 ND C5 J2 ND C5 J3 ND C5 ND C5 ND C5 ND C5 J7 ND C5 .18 ND C5 J9 ND C5 J10 ND C7 Α1 ND C7 A2 ND Ç7 A3 ND C7 A4 ND A5 ND C7 A6 ND C7 ND C7 A8 ND C7 Α9 ND C7 C7 C7 A10 ND B1 ND B2 ND C7 В3 ND C7 84 ND **B5** ND C7 B6 ND C7 **B7** ND C7 B8 ND C7 **B9** ND C7 B10 ND C7 C1 ND C7 C2 ND C7 C3 ND C7 C4 ND C7 C5 ND C7 C6 ND C7 C7 ND C8 ND C7 C9 ND <u>C7</u> C10 ND C7 D1 ND C7 D2 ND C7 D3 ND C7 D4 ND C7 D5 ND D6 ND Ç7 D7 ND Ç7 D8 ND C7 D9 ND <u>C7</u> D10 C7 E1 ND C7 E2 ND C7 E3 ND C7 E4 ND C7 E5 ND C7 E6 ND E7 ND C7 E8 ND Ç7 E9 ND C7 E10 ND C7 F1 F2 C7 ND

EPA SAMPLE ID: BA-00002 LAB SAMPLE ID: 271300244-0002 ERROR CHECK Matrix Analysis Method Air TEM-ISO Prep Indirect - Ashed
QC Type NotQC OK - No errors found Data Entry by (e.g., M. Smith)

Data Entry date 6/21/2013 QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

	Grid	Structure	Na -	current GO Structures	, ulen stop	<u>,                                     </u>	<del></del>											
Grid	Opening	Type	Primary	Structures Total		sions (a)	Identification	,	Mineral (	Class (b)		Mineral	EDXA		1 = v	s, blank	= no	CII
C7 ·	F3	ND	_ I Illiany	I Viai	Length	Width	<del>                                     </del>	LA	OA_	CH	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Count
C7	F4	ND		<del> </del>	<del> </del>		<del> </del>			-								1
C7	F5	ND			-				-		ļ							
C7	F6	ND	7	1	7 77		<del>                                     </del>		-									
C7	F7	ND						-		<del> </del>								
C7	F8	ND								<del></del>								
C7	F9	ND	<ul><li>1 1 1 1 2 1 1</li></ul>	1997 5	100	1100		<del>                                     </del>	<del></del>		17.00				<u> </u>			
C7	F10	ND			7,300			+	}					<u> </u>	2.7			
C7	G1	ND	Number 1	91 1 V 1 11		34 4 4 7 7	27.7 \$6.2 1.00 2.7	+		-								
C7	G2	ND					- T	+										
C7	G3	ND		7	7 3		# 71, NASA	3 3 3 3										
C7	G4	ND	W 11 8	100 11 11 12	1941 P. F.	4.7	3.00 - 3.757-5	1		<del> </del>								
C7	G5	ND	J. Jak 46				e vysu vičis	4 3 3 3						<del></del>				
C7	G6	ND	SHAPE S	40 JAN 1	2.00	277 Sarr	(194 <u>)</u> 12.7	4		1.5					+			
C7	G7	ND	<u> 1 30 1164</u>	25 8 8	4.52.386	र्के अंदर्भ स्वीत	14 7 14 14 1	a tabus							<del> </del>			
<u>C7</u>	G8	ND	<u> </u>		1250	1000		4 1 A 13.5	9 12:		7	1 /4/			-			
<u>C7</u>	G9	ND	1100	13 of 25 13 of	Property	34,31	883 15 MILES	18.29,7	100	J. W. 14	* 1,125 g j	25.2						
C7	G10	ND			A 955	. y . 14 J.		1,7,99	100	11.72.1	0. 548							
C7	H1	ND				200	5 45 18								+			
C7	H2	ND ND	<u> </u>		$\vdash$				St				11 114		1			
C7	H3	ND NO	- ''		$oxed{\Box}$	7 Vin 5									+			
C7 C7	H4	ND						· 44. [漢							1			
C7	H5	ND		50 S	1000	APR 19.7	355 HOV 194		1 1 1 1 1 1	,3 J					1			
C7	H6	ND ND	1 8 7 2	1.67 1.	25° es 30			15 2 2	1. 25	40,000		44 July 1						
C7	H7	ND ND						1 1 5		J)		<u> </u>						
C7	H8	ND NO				20 000	47.85.17			7					1			
C7	H9 H10	ND ND					7.5		$oxed{oxed}$						1	-		
C7	11	ND ND					18 1 Do 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<b></b>										
C7	12	ND	1 1 1 1 1 1 1	1927 (C. 1927) 1947 (C. 1937)		<del>) - 1321</del>		<b> </b>										
C7	13	ND ND	70.57	18 1 X	10 m	35 W 18 V 1808 - 504					I	- 3						
C7	14	ND	144				100			100 20	11				1.1		$\neg$	
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C7	17	ND				-	-	1 1 5		$ \downarrow$								
C7	18	ND		777			-	ļ	9 11 1									
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C7	J1	ND						10.0	25. 7		d 377 Years			The second second				
C7	J2	ND			2 2 2 2 2 2 3 2 4 3 4 3 4 3 4 3 4 3 4 3		The second second	A .			11.00				177			
C7	J3	ND	7	2 - 2 - 2 - 2 - 3		- 1,450 ZF						ALMORA LANG	4.46					
C7	J4	ND		3 7 3 5		3 3 4	A 100 1			-								
C7	J5	ND	77				7 5 T 3								<u> </u>			
07	J6	ND		5,18 (5.5)	11.144			$\vdash$			7.04		-		1			
27	J7	ND		1 1 1 1 1 N														
27	J8	ND	100 113	97 92	y 41 10 11 1					$\longrightarrow$								
27	J9	ND		(2-7-35)	2/2014/256	100			+	7.0								
27	J10	ND	3 3 3 4 4 4			794			7 7 7 7		<del></del>							
29	A1	ND		SEC. 1.19.5	100	77 g 1 g 3												
29	A2	ND					100											
29	A3	ND					(46 ) (1 <sub>2</sub>											
29	A4	ND		3 V	4 1 1	5 / A A	77 - <del>77,7</del> 7	3.0	-		-+							
29	A5	ND					14.5	2 8			- +	<del></del>	$\overline{}$		<del>  </del>			
29	A6	_ND				1-179	ar Markey 12	87 5.7	9371		7.5	<del>- +</del>			<del> </del>		$\dashv$	
29	A7	ND		7.5				25,777	7 % ed.						<del>                                     </del>			
9	88	ND				25, 75,		<u> </u>				3 6 6			<del>   </del>			
9	A9	ND				7		y			100				<del>                                     </del>	$\dashv$	-+	
9	A10	ND											-+					
9	B1	ND .				4.4		2.7		2 7 J					<del></del>			
9	B2	ND				-100		J. 5.67						<del></del>	<del>                                     </del>	+		
9	B3	ND													<del>                                     </del>			
9	B4	ND			<u>, 1949 r</u>		5.50		1 2 2 2								-+	
9	B5 B6	ND ND													<del></del>		-+	
9	B7	ND ND					5 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5			$-\Gamma$					<del>-</del>	_		
9	B8	ND																
9	B9	ND 1																
9	B10	ND	<del></del>							$-\bot$							$\neg$	
9	C1	ND		7 × × +		<del>  </del> -	<del></del>											
9	C2	ND 3	J. 75 34 1				32.13.14				$-\bot$	$-\bot$		- 18 A - 11 - 12 - 13 - 1				
9	C3	ND	14 Ye 1		1.87				<del></del>	$\dashv$					$\Box$			
9	C4	ND	-										$-\downarrow$					
9	C5	ND		7/2 mg				+									$\bot$	
9	C6	ND			7777	-+		-+	-+									
9	C7	ND				<del></del>		-+								$-\Gamma$	$\Box$	
9	C8	ND			7 7 7		<del>  </del>	-+		-+		_						
9	<u>C</u> 9	ND /	100		<del>-  </del>	<del></del>										$\bot$ $\bot$		
9	C10	ND								<del></del>								
9	D1	ND				10 10 10					<del>, 1</del>					_		
9	D2	ND	1 1 1		0.00			+		-						-1		
9	D3	ND							<del></del>	-+		-+						
9	D4	ND					7.54											
9	D5	ND				J 1 1 1 1 1 1	DATA ENTRY		<del>- +</del>	_	<del>-  </del> -	<del></del>	-				-16	

## LIBBY TEM Asbestos Structure Count

0412-003\_BA-00002\_271300244-0002\_TEM-ISO\_AR\_06-19-13\_IA\_NotQC\_C0.xism

EPA SAMPLE ID: BA-00002 LAB SAMPLE ID: 271300244-0002	Matrix Air Analysis Method TEM-ISO	Prep Indirect - Ashed QC Type NotQC	ERROR CHECK OK - No errors found
Data Entry by (e.g., M. Smith)  Data Entry date 6/21/2013  Target Sensitivity Reached-Complete current GO, then exceed	QA by (e.g., M. Smith) M. <u>Smollock</u> QA date 7/1/2013		

	Structure	No. of S	tructures	Dimens	sions (a)			Mineral C	lace (h)		T		T				
Opening	Туре	Primary	Totai	Length	Width	Identification		$\overline{}$			Mineral	EDXA	<u>.</u>				CH Not
D6	ND							T	0.1	INCHA	Desc (c)	QDS (a)	Comments	Sketch			Counted (e)
D7	ND			11.7				<del></del>		ļ							
D8	ND	100						<del> </del>									
D9	ND	7.5	1		3 4 32 7												
D10	ND		3.0				2.00		3 3								
_	D7 D8 D9	D6 ND D7 ND D8 ND D9 ND	D6 ND D7 ND D8 ND D9 ND	D6 ND D7 ND D8 ND D9 ND	Type	Def	Type	Def	Defining   Type   Primary   Total   Length   Width   Identification   LA   OA	Def	Def	Description   Type	Type   Primary   Total   Length   Width   Identification   LA   OA   CH   NAM   Desc (6)   Obs (d)	Type	Type   Primary   Total   Length   Width   Identification   LA   QA   CH   NAM   Desc (c)   Qbs (d)   Comments   Sketch	Defining   Type   Primary   Total   Length   Width   Identification   LA   OA   CH   NAM   Desc (c)   Qbs (d)   Comments   Sketch   Photo   Desc (c)   Obs (d)   Comments   Co	Type   Primary   Total   Length   Width   Identification   LA   OA   CH   NAM   Desc (c)   Qbs (d)   Comments   EDXA   1 = yes, blank = no

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number Tag Status Lab QC Type Lab Sample Number Matrix Category Prep Analysis Method Est. Particulate Loading	BA-00011 AL1 ANALYZED NOT QC 271300244-0003 Air Field Direct TEM-ISO 6%	PARAMETERS Effective filter area F factor Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile) Grid opening area Volume (L) or Area (cm2) Sensitivity (amphibole) Sensitivity (chrysotile) Area Examined (amphibole)	385.0 mm2 1.00E+00 105 105 0.013 mm2 706 L 4.00E-04 s/cc 4.00E-04 s/cc 1.365 mm2
Magnification: LOW	<del>-</del>	Area Examined (chrysotile)	1.365 mm2

Magnification:	LOW

Recording Min AR Rules: 3:1	Min length (um) Min w	vidth (um) Stopping 0.25 Rules:	Target Sens. 0.0004	Max AE (mm²) 10.000	Max N LA 25
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COUNTS (based on countable structures only)

		THE STRUCTURE (	<del>,,,,</del>	
Bin	LA	OA	СН	All Asbestos
Total				1 All Asbestos
PCME	0	0	0	0

## CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total			The second secon	
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

	_	NA		ı – .
ш	_	17/	١M	

0412-003\_BA-00011\_271300244-0003\_TEM-ISO\_AR\_06-20-13\_D\_NotQC\_C0.xlsm

LIBBY

FILE TYPE: Original

**Recording Rules:** 

Stopping Rules:

3:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity
5.00	)	Minimum Length (um)	105	GOs required to reach target
0.25		Minimum Width (um)	10.000	Maximum Area Examined (mm²)
			770	GOs required to

F-factor Calculation:

(mm²) red to ch max area Maximum # of 25 Structures Estimated # of GOs 105 required

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for senal dilution

٧

## **Input for Ashing of Secondary Filter**

Fraction of secondary filter used for ashing

F-factor

Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

## **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27	•	EPA Sample Number:	BA-00011	Tag			
Instrument ID		OL 100 C	X II (27-	2 Matrix					
Voltage (KV)		100	0		Air volume (L), dust sample area (cm²), or dustfall container area (cm²):				
Magnification (do not include X)	LOV	<b>~</b>	Date received	Date received by lab					
Grid opening area	0.01:	30	Lab Job Number:						
Scale: 1L =	1.00	0	Lab Sample N	Lab Sample Number:					
Scale: 1D =		1.00	0	Number of grid	Number of grids prepared				
Primary filter area (	385.	0	Prepared by (e	Prepared by (e.g., M. Smith)					
Secondary Filter Ar	360.	0	Preparation da	Preparation date					
Category	Field	•	EPA COC Nun	nber					
Filter Status		ANALYZED	•	Estimated Part	iculate Loadii	ng (%)			

7					
AL1	Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador			
Air	Analysis date	6/20/20	13		
706	Prep	Direct	•		
5/21/2013	If sample type = air, is there loose material or debris in the cowl?	No 🔻			
271300244	Analysis Method	TEM-ISO	•		
271300244-00	3 Analysis Method SOP	ISO 10312			
10	Grid storage location	2713-LIB-56			
D. Barney	Archive filter(s) storage location	ESAT Archive			
4/15/2009					
0412-003	F- factor	- 1/1			
6%	Lab QC Type	от QC			

^	$\sim$	54	2.5		A.	~	S
·	v	ш	w	C,	N	1	J

Also analyzed on 7/1/2013.

19

 EPA SAMPLE ID:
 BA-00011
 Matrix
 Air
 Prep
 Direct
 OK - No errors found

 LAB SAMPLE ID:
 271300244-0003
 Analysis Method
 TEM-ISO
 QC Type
 NotQC
 OK - No errors found

 Data Entry by (e.g., M. Smith)
 B. Gallagher
 QA by (e.g., M. Smith)
 M. Smollock
 QA date | 7/2/2013

Target	Sensitivit	v Reached	e 6/21/201: Complete	3 3	41	ك	QA date	7/2/201	3		-	J						
Grid	Grid	Structure	No of	Structures	, tnen sto	p. Isions (a)	T	т					,					
	Opening	Туре	Primary	Total	Length	Width	Identification	LA	Mineral OA	Class (b	NAM	Mineral	EDXA	1	1 ≃ y	s, blank	= no	CH Not
E1	A1	ND						<del> </del>	1 UA	T CH	I NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)
E1	A2	ND						1	-	+	+				<del> </del>			
E1	A3	ND									1		<del> </del>		<del> </del>	ļ		ļ
<u>E1</u>	A4 A5	ND ND	<del> </del>	<u> </u>	<u> </u>	1 1	- 0						-		<del> </del> -	<del> </del>	-	
E1	A6	ND ND		<del> </del>											1	<del>                                     </del>		
E1	A7	ND	+	<del> </del>			ļ									<del> </del>	<del></del>	
E1	A8	ND	+	<del> </del>	<del></del>	<del> </del>		-	-	<b>—</b>								
E1	A9	ND	<del>                                     </del>	<del> </del>		<b>-</b>			<u> </u>									
E1	A10	ND				<b>†</b>			<del> </del>		-			,				
E1	B1	ND							<del> </del>	-	-				<u> </u>			
<u>E1</u>	B2	ND													·	ļ		
E1	B3	ND	ļ.,,,							<del>                                     </del>	1	7			<del> </del>	<del></del>		
E1	B4 B5	ND													<del> </del>			
E1	B6	ND ND													<del>                                     </del>			
E1	B7	ND	<del>                                     </del>	<del> </del>														
E1	B8	ND	<del> </del>		-					-								
E1	B9	ND			-		•••		ļ									
E1	B10	ND						ļ										
E1	C1	ND					-	l		-	$\vdash$				<u> </u>			
<u>E1</u>	C2	ND				Pr 12.	<u> </u>		-	<u> </u>					<b> </b>			
E1	C3	ND							1	<b> </b>								
E1	C4	ND					100000000000000000000000000000000000000							· · · · · · · · · · · · · · · · · · ·				
E1	C5	ND	<del> </del>									22.						
E1	C6	ND	-	1 1														
E1	C7 C8	ND ND	<del> </del>															
E1	C9	ND	<del>                                     </del>															
E1	C10	ND	<del> </del>					-				I						
E1	D1	ND				<del></del>												
E1	D2	ND																
E1	D3	ND			7 7 7		7 - 1 - 7 - 10											
E1	D4	ND						7		50		-						
E1	D5	ND					***							· · · · · · · · · · · · · · · · · · ·				
E1	D6	ND																
E1	D7	ND	-							2.5								
E1 E1	D8 D9	ND ND						9 -		5.3								
E1	D10	ND ND																
E1	E1	ND																
E1	E2	ND	<del></del>															
E1	E3	ND						+			-							
E1	E4	ND				7-2	<del>7777 - 1</del>											
E1	E5	ND																
E3	A1	ND																
E3	A2	ND																
E3	A3	ND	ļ		- 7			75										
E3 E3	A4 A5	ND												:				
E3	A6	ND ND																
E3	A7	ND			-													
E3	A8	ND						-			-+							
E3	A9	ND					<del></del>											
E3	A10	ND					A 6		<del></del>	<del>- 120</del>	1.72		-+		<u> </u>			
E3	B1	ND	<u> </u>							$\neg +$	-+							
E3	B2	ND	I				74, 144									-+		
E3 E3	83 84	ND ND				1111								A CONTRACTOR			-+	
E3	B4 B5	ND ND		-							$\Box T$							
E3	B6	ND ND																
E3	B7	ND					<u> </u>			- 1								
E3	B8	ND		<del></del>			<del></del>			-+		$-\!\!\!\!-\!\!\!\!\!\!+$				$-\mathbb{I}$		
_E3	B9	ND					+		-+	-+		-+						
E3	B10	ND								-								
E3	C1	ND								-								
E3	C2	ND															-+	
E3	C3	ND ND															-+	
E3 E3	C4 C5	ND ND					- No.									-		
E3	C6	ND ND	<del></del>			+					$ \Box$						$\neg +$	
E3	C7	ND ND	51.6							_								
E3	C8	ND		<del></del>				-+										
E3	C9	ND					+	<del>  </del> -	$\dashv$	-+								
E3	C10	ND									-		<del></del>					
E3	D1	ND							-+	-+								]
E3	D2	ND							7 1.									
E3	D3	ND						<u> </u>										
E3	D4	ND			$-\Gamma$									<del></del>				——
E3	D5 D6	ND																
E3	D7	ND ND														$\neg$	_	
E3	D8	ND		<del></del>	-+												20	
							DATA ENTRY 2						- 1	· T			20	

## LIBBY TEM Asbestos Structure Count

0412-003\_BA-00011\_271300244-0003\_TEM-ISO\_AR\_06-20-13\_D\_NotQC\_C0.xlsm

EPA SAMPLE ID: BA-00011 LAB SAMPLE ID: 271300244-0003	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	ERROR CHECK  OK - No errors found
Data Entry by (e.g., M. Smith)  B. Gallagher  Data Entry date 6/21/2013  Target Sensitivity Reached-Complete current GO, then stop.	QA by (e.g., M. Smith) M. Smollock QA date 7/2/2013	<del></del>	

1	Grid	Structure		urrent GO,														
Grid	Opening	Type		tructures		sions (a)	Identification		Mineral C	lass (b)		Mineral	EDVA		1	- 511		
		Type	Primary	Total	Length	Width	, activition	Δ	OA	СН		Does (s)	Cha (d)	Comments	Charter	s, blank		CH Not
E3	D9	ND			100					1	147-141	Desc (C)	ODS (g)	Comments	Sketch	Photo	EDS	Counted (e)
E3	D10	ND						7		N-								
E3	E1	ND						_										
E3	E2	ND					<del> </del>			-								
E3	E3	ND																
E3	E4	ND																
E3	E5	ND																
E3	E6	ND																
E3	E7	ND							1.0									
E3	E8	ND I																
E3	E9	ND		-														
E3	E10																	
E3	F1	ND					4											
E3	F2	ND ND					1 A			1 1	100			***				
		ND I				B - 61 - 52		24		7 - 7 -								
E3	F3	ND							5 7 7					<del>* ***</del>				
E3	F4	ND ND			- 1						1.7			* **				
E3	F5	ND			100	A 11 A	100											
E5	H1	ND		2	17 (37)	1 1 10	A 44 4 4 1		1000									
_E5	Н3	ND		5 1 2 2 5		4.450	State Alegan				189.8			<del></del>			<del></del> i	
E5	H5	ND				有可能性的	77 T. J.		77.5				-					
E5	H7	ND	100			2	1 1 2 2 2 2 3											
E5	H9	ND		77	***	4.1 11.1		7										

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number Tag Status Lab QC Type Lab Sample Number Matrix Category Prep Analysis Method Est. Particulate Loading	BA-00012 AL1 ANALYZED NOT QC 271300244-0004 Air Field Direct TEM-ISO 7%	PARAMETERS Effective filter area F factor Number of Grid Openings (amphibole) Number of Grid Openings (chrysotile) Grid opening area Volume (L) or Area (cm2) Sensitivity (amphibole) Sensitivity (chrysotile) Area Examined (amphibole) Area Examined (chrysotile)	385.0 mm2 1.00E+00 110 110 0.013 mm2 687 L 3.92E-04 s/cc 3.92E-04 s/cc 1.430 mm2
Magnification: LOW		, "od Examined (onlysome)	1.430 mm2

Manaicadia	1.0111
Magnification:	LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens	Max AE (mm²)	Max N LA
Rules:	2.1			- in the state of		Max AE (mm )	Max IV LA
Maies.	3.1	5	0.25	Rules:	l 0.0004	10.000	25
						.0.000	20

COUNTS (based on countable structures only)

Bin	LA LA	OA	СН	All Ashestos
Total				17 III 7 ISBUSTOS
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

FII	F	NA	М	F

0412-003 BA-00012 271300244-0004 TEM-ISO AR 06-20-13 D NotQC C0.xlsm LIBBY

FILE TYPE: Original

## **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27	•	EPA Sample Number:	BA-00012	Tag	AL1	-	
Instrument ID		OL 100	CX II (27	7-2 Matrix			Air	-	
Voltage (KV)		10	00	Air volume (L), du		cm²), or	687	,	
Magnification (do not include X)	4,800	LC	w	Date received	by lab		5/21/20	013	
Grid opening area (mr	n²)	0.0	130	Lab Job Numb	per:		271300	271300244	
Scale: 1L =		1.0	00	Lab Sample N	umber:		271300244	4-0004	
Scale: 1D =		1.0	00	Number of grid	s prepared		10		
Primary filter area (mm	<sup>2</sup> )	385	5.0	Prepared by (e	.g., M. Smith	)	D. Barr	ney	
Secondary Filter Area	(mm²)	360	0.0	Preparation da	te		4/15/20	09	
Category	Field	•	EPA COC Nun	EPA COC Number					
Filter Status	ANALYZED	_	Estimated Part	Estimated Particulate Loading (%)					

	E. Wy	att-Pe	scador	
	6	/20/20	13	
ı	Direct		-	
	No		•	
]	TEM-ISC	)	•	
	ISO 10312 2713-LIB-56			
	2713-LIB-56			
	ESA	T Arc	nive	
		1		
NO	τQC		•	
		6 Direct No TEM-ISC	No TEM-ISO ISO 1031 2713-LIB ESAT Arch	

Analyzed by (e.g., M. Smith)	E. Wyatt-Pe	escador
Analysis date	6/20/20	13
Prep	Direct	-
If sample type = air, is there loose material or debris in the cowl?	No	-
Analysis Method	TEM-ISO	•
Analysis Method SOP	ISO 103	12
Grid storage location	2713-LIB	-56
Archive filter(s) storage location	ESAT Arc	hive
F- factor	1	
Lab QC Type	NOT QC	-

#### Recording Rules:

### Stonning Bules

INCOUR	uni	rules.	Stopping R	ules:
3:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity
5.0	0	Minimum Length (um)	108	GOs required to reach target
0.2	5	Minimum Width (um)	10.000	Maximum Area Examined (mm²)
			770	GOs required to reach max area
F-facto	or Ca	alculation:	25	Maximum # of Structures
Indirec	t Pr	ep Inputs	108	Estimated # of GOs required

#### Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

#### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	V
----------------------------------	---

#### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

EPA SAMPLE ID: BA-00012 LAB SAMPLE ID: 271300244-0004 ERROR CHECK Маtrix Analysis Method Air TEM-ISO Prep Direct
QC Type NotQC OK - No errors found Data Entry by (e.g., M. Smith)

Data Entry date
6/21/2013 QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

Target	Sensitivity	Reached-C	6/21/2013 Complete current	GO then sto	_i	QA date	7/1/201	3			j						
Grid	Gnd	Structure	No. of Structure	Dimer	nsions (a)	T	Т	Mineral (	Close (h)				T				
L	Opening		Primary Tota	l Length	Width	Identification	LA	OA	CH	NAM	Mineral	EDXA	Comments	1 = y	es, blank	= no	CH Not
G1	A1	ND			(a) (b)				1	1 117.111	LDesc (c)	ODS (a)	Comments	Sketch	Photo	EDS	Counted (e)
G1 G1	A2 A3	ND	<u> </u>				1.5								<del> </del>		<u> </u>
G1	A4	ND ND	<del> </del>												<del> </del>	-	<del> </del>
G1	A5	ND						<b> </b>			200				<b></b>		<del> </del>
G1	A6	ND					-	<del>                                     </del>									
G1	A7	ND		1	1	<del> </del>	-	ļ		ļ				*			
G1	A8	ND					100		-	<del> </del>							
G1	A9	ND					-	-		<b></b>							
G1_	A10	ND_						<del>                                     </del>	<u> </u>								
G1 G1	B1	ND						T				1 777		<del></del>			
G1	B2 B3	ND ND					11			1 1	7			+	-		
G1	B4	ND ND		_	1 1 1									1		-	
G1	B5	ND						1		( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )	1.						
G1	B6	ND			12.57.5												
G1	B7	ND	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-						1 1			
G1	B8	ND				733 7			-								
G1	B9	ND			1.77					$\vdash$							
G1	B10	ND	3														
G1	C1	ND					V 1						· · · · · · · · · · · · · · · · · · ·	<del> </del>			
G1 G1	C2 C3	ND ND				4 1 1 1 1 1 1 1 1 1 1				17.7				1			
G1	C3	ND ND				34 6			3 - 1					1			
G1	C5	ND ND	<del></del>	+	341	1	685 E										
G1	C6	ND ND	<del>  </del>				<u> </u>				I						
G1	C7	ND		_								I					
G1	C8	ND		-					-				-				
G1	C9	ND						<del>  </del>						<b> </b>			-
G1	C10	ND					7 7				<del></del>						
G1	D1	ND		e lave d	\$17. QAG		\$										
G1	D2	ND ND	1 11 11 11 11 11 11 11	1.3	die Herrie	9.50		7.3							-+		
G1 G1	D3 D4	ND ND			94 <u>,                                   </u>			200	S					1			
G1	D5	ND			-12						5 5						
G1	D6	ND														<del></del>	
G1	D7	ND	1020														
G1	D8	_ ND	A. 15 1150											2.4			
G1	D9	ND			77.7												
G1	D10	ND			24 3 3	4 7 3 14 4 5 5 5											
G1	<u>E1</u>	ND			1 1 1 T					77 1							
G1	E2	ND		18 07 1									<del></del>	-			
G1 G1	E3	ND ND											· · · · · · · · · · · · · · · · · · ·	<del>                                     </del>			
G1	E4 E5	ND ND														-+	
G1	E6	ND							1 1 1	2 2							
G1	E7	ND								11111							
G1	E8	ND															
G1	E9	ND						+									
G1	E10_	ND			1 14					-+							
G3	A1	ND															
G3	A2	ND									-+	-+					
G3 G3	A3 A4	ND .					2						<del></del>				
G3	A5	ND ND							$-\top$								
G3	A6	ND I	<del></del>	+ 4			$\longrightarrow$										
G3	A7	ND		<del>                                     </del>	100						$-\bot$						
G3	A8	ND		1				-+				-+					
G3	A9	ND			New York	1 1 1 1 1 1 1 1		-+	-+							[	
G3	A10	ND			157757	7 J. D. S.		- T				<del></del>					
G3	B1	ND			172	4 <u>75 5</u> 57											
G3	B2	ND				Contract of	19-87 P. 1	es a late	V V 3.	2.52	7.77						
G3 G3	B3 B4	ND ND								-3,347	1.1341.				-+		
_G3	B5	ND ND			(c 160 gib 1			$-\bot$									
G3	B6	ND		1		1 112											
G3	B7	ND		<del>                                      </del>	+++		-+		-+	-+	$-\bot$	$-\bot$					
G3	88	ND	V.		-+		-+										
G3	B9	ND		10 70 7	<u> </u>				-+	$\dashv$							
G3	B10	ND									-+	<del>-  -</del>		<del></del> -			
G3	C1	ND			1, 400	37 T 13 B							<del></del>				
G3	C2	ND			3. 3.	V-1						-					
G3 G3	C3 C4	ND .															
G3	C5	ND ND		1	$\vdash \vdash \vdash$			$-\bot$	$-\Gamma$								
G3	C6	ND		1 1 1 1 1						$-\Box$	$-\Box$	$\Box$					
G3	C7	ND	<del></del>	<del>                                     </del>	<del>     </del>			<del> </del> -									
G3	C8	ND				2		-+									
G3	C9	ND		1					-	A 15 A					$-\Box$	$-\mathbf{I}$	
G3	C10	ND			+				+								
G3	_D1	ND							-			$ \vdash$					
G3	D2	ND				3.134.13			$\neg \vdash$								
G3	D3	ND											<del>-</del>			24	<del> </del>
∠-UU3_BA	<b>⊷∪∪∪12_271</b> 3	500244-0004_	TEM-ISO_AR_06-20	-13 D NotOC	CO views 6	DATA ENTRY 1											

EPA SAMPLE ID: BA-00012	Matrix Air	0	ERROR CHECK
LAB SAMPLE ID: 271300244-0004	Analysis Method TEM-ISO	Prep Direct QC Type NotQC	OK - No errors found
Data Entry date   6/21/2013	QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013		
Target Sensitivity Reached-Complete current GO, then stop.	47. data[77.172013		

	Grid	Structure																
Grid	Opening	Type		tructures		sions (a)	Identification		Mineral C	Class (b)		Mineral	EDYA		1 - 1 - 1 -	s, blank		
G3			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch			CH Not
	D4	ND													4	7 11010		Counted (e
G3	D5	ND				2 14 15	1 1 1 1 1 V	Adja 11		1.75	1							
G3	D6	ND					7 18 18 18 18 18 18 18 18 18 18 18 18 18			177	<b> </b>							
G3	D7	ND	7.5				11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1775	A. 1971		-			4			
G3	D8	ND				7 4 5 7 1 7	745/1007		3.17.13	100	1	1000						
G3	D9	ND				3 10 10 10		1 117 31		<del> </del>								
G3	D10	ND			1 1 1 1 1				<del>                                     </del>									
G3	E1	ND :	2.1		7				<del> </del>									
_G3	E2	ND					7 17 17 17		<del>                                     </del>									
G3	E3	ND	100						<del> </del>									
G3	E4	ND				7					·							
G3	E5	ND									-							
G3	E6	ND	1.7							·	ļ							
G3	E7	ND											100			-		
G3	E8	ND																
G3	E9	ND							ļ. <u>.</u>									
G3	E10	ND																
G3	F1	ND						3			<u> </u>							
G3	F2	ND								20 1		4.00						
G3	F3	ND				200.0	7 7 7 8 7 FE		131.8		100							
G3	F4	ND				5 88 5 6			A 11 / 14	F 1	1/10	15 150						
G3	F5	ND		30.4		4 4 4		, the sale,	150 15	1.0		100		With the second second				
G3	F6	ND ND					Analy Hyzit	Car Name			181 8			and the second				
G3	F7	ND ND		- (				145 F.			11.00	10 y 15" .				-+		
G3	F8					\$1.50		44 4 3 44		·	1.45	1.7						
G3	F9	ND		<u> </u>	5.34, 1.1			S. 7. 1					10			<del></del>		
		ND	1 7 1 5 7 L	1 1 1 1 1 1			1000	18 8 8			1 .14						<u> </u>	
G3	F10	ND		2 1 1 1 1						7.7								

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00021	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	75
Lab Sample Number	271300244-0005	Number of Grid Openings (chrysotile)	75
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	988 L
Prep	Direct	Sensitivity (amphibole)	4.00E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	4.00E-04 s/cc
Est. Particulate Loading	5%	Area Examined (amphibole)	0.975 mm2
		Area Examined (chrysotile)	0.975 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				P R P W. draine
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				V
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

ĘΠ	F	NΔ	M	F٠

0412-003\_BA-00021\_271300244-0005\_TEM-ISO\_AR\_06-20-13\_D\_NotQC\_C0.xlsm

FILE TYPE: Original

 $\blacksquare$ 

#### **Recording Rules:**

#### **Stopping Rules:** ▼ Minimum Aspect Ratio 0.00040 Target Sensitivity

## LIBBY **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27	▼	EPA Sample Number:	BA-00021	Tag	AL1	~	
Instrument ID		OL 100 C	X II (27-2	2) Matrix	Matrix				
Voltage (KV)		10	0	, , ,	Air volume (L), dust sample area (cm²), or dustfall container area (cm²):				
Magnification (do not include X)				Date received	Date received by lab				
Grid opening area	(mm²)	0.01	30	Lab Job Numi	271300244				
Scale: 1L =		1.00	00	Lab Sample N		271300244-0005			
Scale: 1D =		1.00	00	Number of grids prepared			10		
Primary filter area	(mm²)	385	.0	Prepared by (	1)	D. Bamey			
Secondary Filter A	360	.0	Preparation da	Preparation date			4/15/2009		
Category	Field	-	EPA COC Number			0412-003			
Filter Status	ANALYZED	-	Estimated Par	Estimated Particulate Loading (%)			5%		

Analyzed by (e.g., M. Smith)	E. Wyatt-Pes	E. Wyatt-Pescador			
Analysis date	6/20/201	3			
Prep	Direct	•			
If sample type = air, is there loose material or debris in the cowl?	No	•			
Analysis Method	TEM-ISO	•			
Analysis Method SOP	ISO 10312				
Grid storage location	2713-LIB-	56			
Archive filter(s) storage location	ESAT Arch	ive			
F- factor	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
Lab QC Type	NOT QC	•			

1	5.00	Minimum Length (um)	75	reach target
	0.25	Minimum Width (um)	10.000	Maximum Area Examined (mm²)
			770	GOs required to reach max area
F-fa	actor C	alculation:	25	Maximum # of Structures
Indi	irect P	rep Inputs	75	Estimated # of GO: required
		Fraction of primary filter [For dust and dustfall, ea		ect prep or ashing
		First resuspension volum	ne or rinsate	volume (ml.)

#### Inputs for Serial Dilutions

dilution

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

nput for Ashing	of Secondary Filter

raction of secondary filter used for ashing

-factor

Grid opening traverse direction:	v
----------------------------------	---

## Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

 EPA SAMPLE ID:
 BA-00021
 Matrix
 Air
 Prep
 Direct

 LAB SAMPLE ID:
 271300244-0005
 Analysis Method
 TEM-ISO
 QC Type
 NotQC
 OK - No errors found

Data Entry by (e.g., M. Smith)

A. Fearfield

QA by (e.g., M. Smith)

QA date 7/1/2013

QA date 7/1/2013

Tarnet S	aneltivity I	Panahad C	6/21/2013	urrent GO,	4000 0400	l	QA date	77 172013	<u> </u>			J						
	Grid	Structure	No of S	tructures	Dimens	ions (a)			Minaral C	lass (b)		т						
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	Mineral C OA	CH	NAM	Mineral	EDXA	Comments	1 = ye Sketch	s, blank	≃ no	CH Not
11	A1	ND			Lungar	TTIGUI			<u> </u>	l Cn	IAVIAI	Desc (c)	Ops (g)	Comments	SKEICH	FIIOIO	EDS	Counted (e)
11	A2	ND.																<del></del>
11	A3	ND								-	77.2	<del>                                     </del>						
11	A4	ND			7					3-715		7						
11	A5	ND				3							7 7					
i1	A6	ND						1,11,17							-	<del></del>		
11	A7	ND					7											
. 11	A8	ND				7.	1. T	-		-								
11	A9	ND	77.0		2 2 2 2 2			1, 21										
11	A10	ND				7 11 5.		1.0										
11	C1	ND							2				-					···
11	C2	ND																
11	C3	ND					5 P											-
. 11	C4	ND		7	1	er to the												
11	C5	ND			- 1	100		7.7										
11	C6	ND	1 5 2 A 4 2 W	5.1												<u> </u>		
11	C7	ND	1 1		19 mm - 19 miles	1 July 100	A 1 (4)		A 25 3			1000			3.0			
11	C8	D	1111	1877 J. 1879	50.00		1 1 1 1 1 1 1	100		77.7								
11	C9	ND							2.2	1			4 1					
11	C10	ND									L.,					· · · · · ·		ſ <u></u>
- 11	D1	ND																i
11	D2	ND	1,475.0	W. 1. 18	S 00 V		9-11 Juli W	A14 8						1.15				
<u>  11</u>	D3	ND	100	Page 15		4.5	4 11 11 11 14 14	\$45 KB	\$100 B	300								
- 11	D4	ND	1,000	a 5,44 (7 %)	S 77.1			w, t		et s								
11	D5	ND		4.14.7177	24462	7-17-702		1.0	47.5%		al May	1.4411.8			1720	3/307	37.7	
11	D6	ND				344,700		4 520	Ger ( ) ( )	10 V V		1.5 32	100	alit ike se Yili sijida, d	\$13.50 A.M		(a)	
- 11	D7	ND		V. 1. 1. 3.	1 1 1							7 - 2 - 1 - 1 - 2	S. 1873.1					
- 11	D8	ND	5 × 5							0			1		17 50.7	200		
- 11	D9	ND	5 5 5			19 y 4		187. 35	1.000	Sparis				Tarana and Tarana	1000			
<u>   1</u>	D10	ND				18 1 To 18		*	1. 19			100	7.1					
<u>  [1</u>	F1	ND					7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1		3 Y.		4				1 1			
1	F2	ND		194	7.0				17 5 1	4.5								
!1	F3	ND			1. 1.		1,000	100	1.0									
11	F4	ND		Asset Consultation	- L													
11	F5	ND				1.1.4												
11	F6	ND																
11	F7	ND					No. of the second	- 2										
	F8	ND								Art.				****				
11	F9	ND						2 150				10.0						
11	F10	ND																
13	B1	ND_	7				2 1 2 2											
13	B2 B3	ND																
13	B4	ND ND	7 7 7 7 7													-		
13	B5	ND																
13	B6	ND ND								4		<del> </del>						<b></b>
13	B7	ND				^			7	7 - 1								<u> </u>
13	B8	ND	-							197					1.1			<del></del>
. 13	B9	ND											_		·			<del></del>
13	B10	ND		<del></del>			and the second				-					<b>—</b>		<del></del>
13	D1	ND				-	17.7											
13	D2	ND			7					7.		<b></b>			-			
13	D3	ND								1.77		<del> </del>						<del></del>
13	D4	ND			· · · · · ·	7.1.1.1		12.00				1. 1.1.1.2.1	7			<u> </u>		
13	D5	ND	Secretary 1	-3 <sup>4</sup> 7 7 3.5	. 7 (12.73)	1 1000		17.17.154	<b></b>						-			
13	D6	ND		17 75 9	45,411,28	570 80		74 7 1	7 7 7	7.7								<del></del>
13	D7	ND	4 W 5	200	F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		7 17 17	A 14 17		5 7 7	7.74							
13	D8	ND				1.5	94, 37	7 - 2 - 3					7					
13	D9	ND		100		27. 7	9 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. 4 11		1 1 1 7	· · · · ·							
l3	D10	ND			4 3 5 5 5	54	74 N. S.			5 5								
13	F1	ND			V		es North	18 M	71	C 1	45.5							
l3	F2	ND	14.25	M. Sarak		10.50					4.5							
13	F3	ND			1.24 (25)	. 43.417	1 1 1/2 1 1 1			2 , 2 , 4		1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1					-	
13	F4	ND						<u> </u>		100		4						
13	F5	ND											7					
13	F6	ND							4									
13	F7	ND																
13	F8	ND			1.1													
13	F9	ND	1 1 1 1 1 1			1 7.		1.7										
13	F10	ND	1,200	1. 49			5 90 1 15 1	- 10 - 57										
13	11	ND			7			150			100			5.00				
13	12	ND					3.34	11141	4 5 9 4									
13	13	ND	9 / /	100	2 1 7 3			5 5 5 2										
. 13	14	ND ND						1906				1 1 2						
13	15	ND					2.40/3.19	. * *				L						
												_						

## TEM Asbestos Structure Count -- ISO 10312

<b>EPA Sample Number</b>	BA-00022	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	73
Lab Sample Number	271300244-0006	Number of Grid Openings (chrysotile)	73
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	1016 L
Prep	Direct	Sensitivity (amphibole)	3.99E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.99E-04 s/cc
Est. Particulate Loading	5%	Area Examined (amphibole)	0.949 mm2
		Area Examined (chrysotile)	0.949 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

F	NΙΔ	ME	

Laboratory ID:

Instrument ID

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

(do not include X)

0412-003 BA-00022 271300244-0006 TEM-ISO AR 06-21-13 D NotQC C0.xlsm

LIBBY

**TEM Asbestos Structure Count** 

FILE TYPE: Original

### Recording Rules: ▼ Minimum .

Minimum

Minimum

5.00

0.25

#### Stopping Rules:

Aspect Ratio	0.00040	Target Sensitivity
Length (um)	73	GOs required to reach target
Width (um)	10.000	Maximum Area Examined (mm²)
	770	GOs required to reach max area
		1

## F-factor Calculation:

#### Maximum # of 25 Structures Estimated # of GOs 73 required

**Indirect Prep Inputs** Fraction of primary filter used for indirect prep or ashing (For dust and dustfall, enter 1.0)

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Input for Ashing of Secondary Filter

F-factor

Grid opening traverse direction:	
----------------------------------	--

### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample EMSL27 BA-00022 AL1 Tag Number: OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm2), or 100 1016 dustfall container area (cm²): 4.800 LOW Date received by lab 5/21/2013 Grid opening area (mm²) 0.0130 Lab Job Number: 271300244 1.000 Lab Sample Number: 271300244-0006 1.000 Number of grids prepared 10 Primary filter area (mm²) 385.0 Prepared by (e.g., M. Smith) D. Barney Secondary Filter Area (mm2) 360.0 Preparation date 4/15/2009

EPA COC Number

Estimated Particulate Loading (%)

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescado		
Analysis date	6/21/2013		
Prep	Direct		
If sample type = air, is there loose material or debris in the cowl?	No 🔻		
Analysis Method	TEM-ISO		
Analysis Method SOP	ISO 10312		
Grid storage location	2713-LIB-56		
Archive filter(s) storage location	ESAT Archive		
F- factor	1		
Lab QC Type NOT QC			

#### COMMENTS

Also analyzed on 7/1/2013

Category

Filter Status

Field

ANALYZED

1	
1	
1	
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1	
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i	
1	
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0412-003

5%

			ERROR CHECK
PA SAMPLE ID: BA-00022 AB SAMPLE ID: 271300244-0006	Matrix Air Analysis Method TEM-ISO	Prep Direct	
271000244-0000	Arialysis Metriod TEM-130	QC Type NotQC	OK - No errors found
e.g., M. Smith) B. Gallagher	QA by (e.g., M. Smith) M. Smollock		

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date
6/25/2013 QA date 7/1/2013 Target Sensitivity Reached-Complete current GO, then stop. Structure No. of Structures Dimensions (a)
Primary Total Length Width Mineral Class (b) Grid Mineral EDXA 1 = yes, blank = no Identification CH Not Opening Primary Length \_OA CH NAM Desc (c) Sketch Photo EDS Counted (e) B2 K2 ND K2 В4 ND K2 В6 ND K2 B8 ND K2 B10 ND K2 C1 ND СЗ ND K2 C5 ND K2 ND K2 C9 ND K2 ND K2 D4 ND K2 D6 ND Đ8 K2 ND K2 D10 ND K2 E1 ND K2 E3 ND K2 E5 ND K2 E7 ND K2 E9 ND K2 F2 ND K2 F4 ND K2 F6 ND K2 F8 ND K2 F10 ND K2 ND K2 G3 ND K2 ND K2 G7 ND K2 G9 ND K2 H2 ND K2 H4 ND K2 H6 ND K2 H8 ND K2 H10 ND K4 Α1 ND K4 А3 ND K4 A5 ND K4 Α7 ND K4 A9 ND K4 B2 ND K4 B4 ND K4 В6 ND K4 В8 ND K4 B10 ND K4 C1 ND K4 C3 NĐ K4 C5 ND K4 C7 ND K4 C9 ND K4 E2 ND K4 E4 ND K4 E6 ND K4 E8 ND K4 E10 ND K4 F1 ND K4 F3 ND K4 F5 ND K4 ND K4 F9 ND K4 G2 ND K4 G4 ND K4 G6 ND K4 G8 ND K4 G10 ND K4 H1 ND K4 НЗ ND K4 H5 ΝD K4 H7 ND K4 H9 ND K6 B4 ND K6 В6 ND K6 В8 ND

### TEM Asbestos Structure Count -- ISO 10312

<b>EPA Sample Number</b>	BA-00029	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	65
Lab Sample Number	271300244-0007	Number of Grid Openings (chrysotile)	65
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	1145 L
Prep	Direct	Sensitivity (amphibole)	3.98E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.98E-04 s/cc
Est. Particulate Loading	6%	Area Examined (amphibole)	0.845 mm2
		Area Examined (chrysotile)	0.845 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Sto
Rules:	3:1	5	0.25	R

Stopping	
Rules:	

Target Sens.	Max AE (mm²)	Max N LA
0.0004	10.000	25

COUNTS (based on countable structures only)

2001110 /2000	a on ocunta	DIO DITUOTATOS C	/····y /	
Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

Ett	E	MΔ	84	F

0412-003\_BA-00029\_271300244-0007\_TEM-ISO\_AR\_06-21-13\_D\_NotQC\_C0.xlsm

LIBBY

**TEM Asbestos Structure Count** 

FILE TYPE: Original

#### Recording Rules:

5.00

0.25

▼ Minimum Aspect Rati

#### Stopping Rules:

Minimum Aspect Ratio	0.00040	Target Sensitivity
Minimum Length (um)	65	GOs required to reach target
Minimum Width (um)	10.000	Maximum Area Examined (mm²)
	770	GOs required to reach max area
alculation:	25	Maximum # of Structures

Estimated # of GOs

required

#### F-factor Calculation:

## **Indirect Prep Inputs**

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

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#### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

	1
Grid opening traverse direction:	

### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00029 AL1 Tag Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 1145 dustfall container area (cm²): Magnification 4,800 LOW Date received by lab 5/21/2013 (do not include X) Grid opening area (mm²) 0.0130 Lab Job Number: 271300244 Scale: 1L = Lab Sample Number: 1.000 271300244-0007 Scale: 1D = 1.000 Number of grids prepared 10 Prepared by (e.g., M. Smith) Primary filter area (mm²) 385.0 D. Barney Secondary Filter Area (mm²) 360.0 Preparation date 4/15/2009 EPA COC Number Category Field 0412-003 ▾ Filter Status ANALYZED Estimated Particulate Loading (%) 6%

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador		
Analysis date	6/21/2013		
Prep	Direct		
If sample type = air, is there loose material or debris in the cowl?	No 🔻		
Analysis Method	TEM-ISO		
Analysis Method SOP	ISO 10312		
Grid storage location	2713-LIB-56		
Archive filter(s) storage location	ESAT Archive		
F- factor			
Lab QC Type	NOT QC		

COMMENTS	 	
· <del>- · · - · · · · · · · · · · · · · · ·</del>		

M4

M4

М4

М4

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M4

М4

M4

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М4

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Μ4

M4

M4

M4

M4

M4

F8

F10

G1

G3

G5

. G7

G9

H2

H4

H6

Н8

H10

11

13

15

17

19

J4

J8

J10

ND

			ERROR CHECK
EPA SAMPLE ID: BA-00029	Matrix Air	Prep Direct	
LAB SAMPLE ID: 271300244-0007	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith) B. Gallagher
Data Entry date 6/25/2013 QA by (e.g., M. Smith) M. Smollock
QA date 7/1/2013 Target Sensitivity Reached-Complete current GO, then stop. 1 = yes, blank = no
Sketch | Photo | EDS Grid Structure No. of Structures Dimensions (a) Mineral Class (b) EDXA Mineral CH Not Grid Identification Primary Total Length Width ΙA OA CH NAM Desc (c) M2 ND M2 A3 ND M2 A5 ND M2 A7 ND M2 ND Α9 М2 B2 ND М2 В4 ND М2 B6 ND М2 ND В8 М2 B10 ND M2 ND C1 М2 C3 ND M2 ND M2 Ç7 ND M2 Ç9 ND D2 M2 ND M2 \_D4 ND M2 D6 ND M2 D8 ND M2 D10 ND M2 E1 ND M2 ND E3 М2 ND E5 М2 ND E7 М2 E9 ND M2 ND F2 M2 ND M2 F6 ND М2 F8 ND M2 F10 ND M4 82 ND M4 B4 ND M4 86 ND M4 88 \_ND M4 B10 ND M4 ND C1 M4 C3 ND M4 ND M4 C7 ND M4 C9 ND M4 ND F2

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00030	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	65
Lab Sample Number	271300244-0008	Number of Grid Openings (chrysotile)	65
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	1145 L
Prep	Direct	Sensitivity (amphibole)	3.98E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.98E-04 s/cc
Est. Particulate Loading	3%	Area Examined (amphibole)	0.845 mm2
		Area Examined (chrysotile)	0.845 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)
Rules:	3.1	5	0.25

Stopping
Rules

Target Sens.	Max AE (mm²)	Max N LA
0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	CH	All Asbestos	
Total					
PCME	0	0	0	0	

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

FILE NAME:

0412-003\_BA-00030\_271300244-0008\_TEM-ISO\_AR\_06-21-13\_D\_NotQC\_C0.xlsm

LIBBY

TEM Asbestos Structure Count

# FILE TYPE: Original

### Ctonning Dules.

10 000

Recor	ding	Rules:	Stopping Rules:				
3:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity			
5.0	0	Minimum Length (um)	65	GOs required to reach target			
0.2	5	Minimum (Midth (um)	10,000	Maximum Area			

	Examined (mm <sup>2</sup> )
	GOs required to
770	reach max area
25	Maximum # of
23	Structures

### F-factor Calculation:

Minimum Width (um)

0.25

# Estimated # of GOs required

Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing (For dust and dustfall, enter 1.0)

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

### **Inputs for Serial Dilutions**

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	
----------------------------------	--

# Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00030 Tag AL1 Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 1145 dustfall container area (cm²): Magnification 4,800 LOW Date received by lab 5/21/2013 (do not include X) 0.0130 Lab Job Number: 271300244 Grid opening area (mm²) Scale: 1L = Lab Sample Number: 1.000 271300244-0008 Scale: 1D = 1,000 Number of grids prepared 10 Primary filter area (mm²) 385.0 Prepared by (e.g., M. Smith) D. Bamey 360.0 Preparation date Secondary Filter Area (mm²) 4/15/2009 EPA COC Number Category Field 0412-003 • Filter Status ANALYZED Estimated Particulate Loading (%) 3%

E. Wyatt-Pes	E. Wyatt-Pescador		
6/21/201	6/21/2013		
Direct	•		
No	•		
TEM-ISO	•		
ISO 1031:	2		
2713-LIB-	-56		
ESAT Arch	nive		
1			
NOT QC	•		
	6/21/201 Direct No TEM-ISO ISO 1031: 2713-LIB- ESAT Arcl		

COMMENTS	

 EPA SAMPLE ID:
 BA-00030
 Matrix
 Air

 LAB SAMPLE ID:
 271300244-0008
 Analysis Method
 TEM-ISO

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date

6/25/2013

QA by (e.g., M. Smith)

QA date

7/1/2013

Target 5	Dala Sensitivity	Entry date Reached-C	omplete c	urrent GO	then ston	l	QA date	7/1/2013				j						
	Grid	Structure	No of S	Structures	Dimens	sions (a)	1	1	Mineral C	lace (b)		T	Γ		1 4	s, blank		
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc (c)	EDXA	Comments	Sketch	Photo	FDS	CH Not Counted (e)
02	A2	ND			20775	111401					14014	Desc (c)	OUS (U)	Comments	OKOLON	. 1,0.0		Counted (e)
02	A4	ND	100		100	7 7 7 7			100			7			<del> </del>	1		
02	A6	ND			1 1	3.7					· · · · · · · ·							i
02	A8	ND	1.00	71.5		1.00		1										
02	A10	ND													· · · · · ·		·	
02	B1	ND								1.			1			·		ĺ
02	B3	ND	<i>(</i> 1)					4.5										·
02	B5	ND				4 4 4	to the same of the											
02	B7	ND	100	200	200				14.	17.5					100			
02	B9	ND									J. 16.3	25 T. 74						
02	D2	ND	1 1 1 1									1						
Q2	D4	ND				1 1 1												l
02	D6	ND											7					
02	D8	ND												and the second second				
02	D10	ND			4.4		ter several table											
02	E1	ND		4							4 6 1 4							
02	E3	ND						, e e e e					10 10 10					
02	E5	ND					A										L	
02	E7	ND		2.2					N . N									l
02	E9	ND		ļ	7		44							<u> </u>	<b></b>			
02	F2	ND					Section 1				<u> </u>							
02	F4	ND	2			<u> </u>		<u> </u>			<u> </u>				ļ			<b></b>
O2 O2	F6 F8	ND ND	-	27						<b></b>		<b>—</b>			ļ			<del></del>
02	F10	ND					2 30				7 7					<u> </u>		<del></del>
					35 35 35 35 35 35 35 35 35 35 35 35 35 3	300												
02	G1	ND			20 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 (10 (10 (10 (10 (10 (10 (10 (10 (10 (	3 3 3			100 mm								
O2 O2	G3 G5	ND ND							1000					<del></del>		<u> </u>		<b></b>
02	G5	ND				4 4		200				5.						
02	G9	ND ND								200		1						
04	B1	ND						<del></del>				2 7 7 7						<del></del>
04	B3	ND ND						7.7										
04	85	ND	100			17				1		7 2 2	-		<del> </del>			<del></del>
04	B7	ND											·		<del> </del>			<del></del>
04	B9	ND																<del></del>
04	E2	ND								<del> </del>			***************************************					
04	E4	ND				1.1.1.2				-		<del> </del>						
04	E6	ND		11 100		7.7					7							<u> </u>
04	E8	ND		7 1 1	7		S 4 7 7 1	7 7		<del> </del>	1	250		·····				
. 04	E10	ND	41 31 1					7.1			4 6	-						
04	F1	ND	100							-								
04	F3	ND		7		37.37,5	111	100			1.0		-					
04	F5	ND	1		10 10 10	4-50												
04	F7	ND						4.7										
04	F9	ND						y							1.			
04	G2	ND					7 8 2 8 9						1.0					
04	G4	ND		8 2 S						1,44		3.2			1			
04	G6	ND	2.5					10,000										
04	G8	ND	1.0	5 July 3.	*2 - 2 7 F	6 7 7 74		W 12 - 5										
04	G10	ND					37 S S	100										
04	H1_	ND	1 11			1.0	26.7											
04	H3	ND								3.75								
04	H5	ND																
04	H7	ND	4															
04	H9	ND								7								
04	12	ND					- A A 4-2 M											
04	14	ND			<u> </u>				Contract of									
04	16	ND					36 v. 1 T											
04	18	ND	- 1															
04	110	ND	L.,			7.												
04	J1	ND		<u> </u>														
04	J3	ND			·	1. 1. 1. 1. 1.	in the state of		7. 7									
04	J5	ND .				200 760												
04	J7	ND		Part of the last		1 / 1/2												
04	J9	ND	4 1			ar a s						L						
						· -								<del></del>				

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00037	PARAMETERS	
Tag	AL1	Effective filter area	360.0 mm2
Status	ANALYZED	F factor	1.25E-01
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	760
Lab Sample Number	271300244-0009	Number of Grid Openings (chrysotile)	760
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	739 L
Prep	Indirect	Sensitivity (amphibole)	3.94E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.94E-04 s/cc
Est. Particulate Loading	5%	Area Examined (amphibole)	9.880 mm2
		Area Examined (chrysotile)	9.880 mm2

Magnification: LOW
--------------------

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.		Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

# CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

FΙΙ	F	NΔ	MI	E٠

Laboratory ID:

Instrument ID

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

Category

Filter Status

COMMENTS

(do not include X)

Grid opening area (mm²)

Primary filter area (mm²)

Secondary Filter Area (mm²)

EMSL27

4.800

100

LOW

0.0130

1.000

1.000

385.0

360.0

 $\mathbf{v}$ 

•

**EPA COC Number** 

Estimated Particulate Loading (%)

Field

ANALYZED

0412-003 BA-00037 271300244-0009 TEM-ISO AR 06-25-13 I NotQC C0.xlsm

FILE TYPE: Original

770

25

▼ Minimum Aspect Ratio

Stopping Rules:

0.00040 Target Sensitivity GOs required to 750 reach target

> Maximum Area 10.000 Examined (mm<sup>2</sup>)

GOs required to reach max area Maximum # of Structures

Estimated # of GOs 750 required

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

Inputs for Serial Dilutions

**Recording Rules:** 

F-factor Calculation:

Indirect Prep Inputs

5.00

0.25

100

25

Minimum Length (um)

Minimum Width (um)

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

0.125 F-factor

Grid opening traverse direction:

٧

Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

### EPA Sample BA-00037 Tag AL1 Number: OL 100 CX II (27-2 Matrix Air volume (L), dust sample area (cm²), or 739 dustfall container area (cm²): Date received by lab 5/21/2013 Lab Job Number: 271300244 Lab Sample Number: 271300244-0009 Number of grids prepared 10 Prepared by (e.g., M. Smith) . Wyatt-Pescador Preparation date 4/15/2009

LIBBY

**TEM Asbestos Structure Count** 

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador
Analysis date	6/25/2013
Prep	Indirect
If sample type = air, is there loose material or debris in the cowl?	No 🔻
Analysis Method	TEM-ISO
Analysis Method SOP	ISO 10312
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Enter the appropriate data in the o calculate the F-factor	
F- factor	0.125
Lab QC Type	NOT QC

0412-003

5%

	17.70	_				ERROR CHECK
EPA SAMPLE ID:	BA-00037	Matrix	Air	Prep	Indirect	
LAB SAMPLE ID:	271300244-0009	Analysis Method	TEM-ISO	QC Type	NotQC	OK - No errors found

QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013 Data Entry by (e.g., M. Smith)

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO, then stop.

Target S	ensitivity	Reached-C	omplete c	urrent GO,														
Grid	Grid	Structure		tructures		ions (a)	Identification		Mineral C	lass (b)		Mineral			1 ≈ ye	s, blank	= no	CH Not
	Opening	Type	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
Q2	A1	ND	11 1 No. 12							1		1						
Q2	A2	ND			ļ					12.75							<u></u>	
Q2	A3	ND ND										ļ						L
Q2	A4	ND															<u> </u>	
Q2	A5	ND_										1 1 1 1 1 1						<b></b>
Q2	A6	ND ND		1.			April 1											
Q2	A7	ND ND			1111	A.4 (1)											<u> </u>	<del></del>
Q2	A8	ND ND						15 15 15 15							<u> </u>	<b></b>		
Q2	A9	ND		100											·	<b></b>		ļ
Q2	A10	ND		<del></del>								-					<u> </u>	
Q2 Q2	B1 B2	ND ND			<del> </del>					ļ		200				<u> </u>	ļ	<del></del>
Q2	B3	ND ND		74	<del> </del>						100	-		<del>}                                    </del>				<del></del>
Q2	B4	ND			70.72	and the same										<u> </u>	ļ	<del></del>
											1.3	1 2 4 4 4		14				
Q2 Q2	85 B6	ND ND	77.7			1 7 6		7 July 1	444			·					├—	<del>                                     </del>
Q2	B6 B7	ND ND				A 20 1 25 1			200			-						
Q2	B8	ND								-						<del> </del>		<del></del>
Q2	B9	ND			-							-		<del></del>		ļ	├—	<del> </del>
Q2	B10	ND	2.74				-										<u> </u>	<b>-</b>
Q2	C1	ND											7 4			<del> </del>	<del></del>	
	C2	ND		1. 19 TV	2.25	11 22 X						-				<b></b>		
Q2 Q2	C3	ND	4 33	4/2				<del> </del>	<del> </del>	-		<del> </del>			<del></del>	<u> </u>	. 7	<del></del>
Q2 Q2	C4	ND ND		70 5 6 84 70 5 71 75 75		15 X X X X X X X		1000		100 10	P. S. 15	<del> </del>					<u> </u>	
Q2	C5	ND		130 130			21.872.17.076 P	1			-	<del> </del>			<b></b>		H	<del></del>
Q2	C6	ND	-		72 11 70 M			1,726 A (178) 1,72 (6) 1 1 1		-		<del>                                     </del>			1 2 2 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	-		<del></del>
Q2 Q2	C7	ND	-	5 8 3	100	1000		17 15 73 17 15 73			1.74.5	07 07	124				<del>,,</del>	<del> </del>
Q2	C8	ND	100	-	<del>                                     </del>		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<del> </del>		3/1								
Q2	C9	ND ND		<del> </del>	1			<del>                                     </del>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	200		<del> </del>				<del> </del>		<del></del>
Q2	C10	ND		<del>                                     </del>	<del>                                     </del>	100		-	15/15	200 S 10	1000	-						<del> </del>
Q2	D1	ND ND		<del>                                     </del>	1 10							49.1				<del></del>	<del></del>	<del></del>
Q2	D2	ND	4. 14. 14.			7.7	3 7 7 7			-						<del> </del>	ļ	<del>                                     </del>
Q2	D3	ND	7								7.2		100			<del> </del>	├	<del> </del>
Q2	D4	ND		<del> </del>														<del>                                     </del>
Q2	D5	ND	2.752			· · · · · · · · · · · · · · · · · · ·				-		<del>                                     </del>				<del> </del>	<del> </del>	
Q2	D6	ND		97 11	7.7	16 A 11 12						<del> </del>		· · · · · · · · · · · · · · · · · · ·			├──	<del> </del>
Q2	D7	ND							-							-	<b></b>	<del></del>
Q2	D8	ND	30						-	7	977	-				<del> </del>	<del> </del>	<del>                                     </del>
Q2	D9	ND	12.77		1.3600	F. 6 80 0 17					-	<del> </del>					$\vdash$	<del></del>
Q2	D10	ND			3 17 15 37 2			- 1 1 / 1								<del> </del>		
Q2	E1	ND	<del> </del>					77 - Fat			<del> </del>	300 60	100				-	
Q2	E2	ND	<u> </u>				The second second	_		-	-				-	├		
Q2	E3	ND		100	<del>                                     </del>	<u> </u>								<del></del>		<u> </u>		<del></del>
Q2	E4	ND	7.7		. 7		14 Sec. 15									-		· · · · · ·
Q2	E5	ND	a 100 100	1977 A. F. L.		45 LW	8 10 /4 15	. 44			100	17.3				<del> </del>	<del> </del>	
Q2	E6	ND	9 7 1800	5 147.407	5 1 5 5 5	Santo.	A 1 1 1 1 1 1 1			34 14	81.75	17	V 9					
Q2	E7	ND	P. 180	a 31, 12, 4	1 1100	300 004	1 1 1 1 1 1 1 1 1	1273		51 11	100	10.00						
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Q2	E9	ND		11.00		2.5						4.4	7.7					
Q2	E10	ND	10 10 11		17 7 9		. 4									-		
Q2	F1	ND		150000	3/25 9	4 7 4		v. 50. 34			,	·					-	
Q2	F2	ND			1 - 50 5	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1900 1 100 1	9 4 9	-		41 24	15 E		A THE STATE OF THE				
Q2	F3	ND	. No. 1	J1 2 2 3	Parks 1 and 1	20 July 20		0.611.0	1. 77	126.	100	17 77 75						
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Q2	F5	ND	1777 374	100	50am 50am			1.35		2.7% E			3-4			%		
Q2	F6	ND	2.1	33. 73.7		<u> 51 S.</u> Sr	nati <u>ni</u> g		50.7%								[	
Q2	F7	ND						<u> </u>		1.0						L		
Q2	F8	ND					1 2 2 2 2		186 7									
Q2	F9	ND	M			7 18.6	124 M 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			12.1		1, 2, 3						
Q2	F10	ND	200	液体结合物	Contract	grand of p	建基金原料器	4 T 1 1	1. Silv				3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
Q2	G1	ND	1917/45	10 N	7-7-5	1 - 3 - 3	555				A 1 70			Ay Fish Comment	gas e			
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Q2	G3	ND	14.75%	10 1 AS AS	17,307	180 Mg	10.75-753		100	1.17		\$2 T S	1. 1.					
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Q2	G5	ND		14 30 30				2.00			1							
Q2	G6	ND											1					
Q2	G7	ND	1000	La de la Const	1000	8 44 4 A	No. 41. 115	2000								7 7		
Q2	G8	ND			1 26		<u> Pinggaran</u>				L	<u> </u>						
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Q2	H2	ND		12.3.1.47	1 24		<u> </u>			_		1	<u> </u>		<b> </b>		ļ	ļ
Q2	H3	ND			100				25 . 8							ļ		<u> </u>
Q2	H4	ND	11/1/2011		<del> </del>	1 1/4 1 1 1 1 1 1	<u> </u>				<u> </u>						<u> </u>	
Q2	H5	ND		100.000	1													
Q2	H6	ND				7.8 44.	<u> </u>		ļ	127, 14						<u> </u>		<u> </u>
Q2	H7	ND	Mr. No. 61/2	Principal (1)				20.000	2.5 % 200				<u> </u>	<u>an nakaba</u>	<b> </b>		ļ	
Q2	H8	ND		1975		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100		9 10		<u> </u>					ļ	L
Q2	H9	ND	1 2 2	1970, Y = 3	100 000	<u> </u>	Participation (18)			1 19 1						ļ		ļ
Q2	H10	ND			4	415 T. V. 14	an ask and as		10000		1 2 2 3 4		<u> </u>	William Tolking the	5	ļ		
Q2	1	ND			-	<b></b>	<u> </u>		1000		ļ	ļ				ļ	ļ	<b></b>
Q2	12	ND	ļ		1					100	<u> </u>	ļ	<b> </b>	1		ļ	ļ	
Q2	13	ND	<u> L</u>	<u> Lister en la companya de la compan</u>		<u> </u>	<u> </u>			<u> </u>	<u> </u>	L	L		L:	L	40_	L
							DATA ENTRY	_										

			ERROR CHECK
EPA SAMPLE ID: BA-00037 LAB SAMPLE ID: 271300244-0009	Matrix Air Analysis Method TEM-ISO	Prep Indirect QC Type NotQC	OK - No errors found
	<del></del>		

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO, then stop. QA by (e.g., M. Smith) M. Smollock
QA date 7/1/2013

Content	Target :				urrent GO,										F1-11-1				
March   Marc	Grid	Grid	Structure					Identification		Mineral C	lass (b)		Mineral	EDXA .		1 = ye	s, blank	= no	CH Not
Section   Sect		Opening	Туре	Primary	Total	Length	Width	- deminication	LA	OA	CH	NAM	Desc (c)		Comments	Sketch	Photo	EDS	Counted (e)
92   15   16   16   17   17   17   17   17   17	02	14	ND		[ ·		T							1.3.1.1.3.					94411104 (07
92							-			-	<del></del>	ļ		<del> </del>			<del> </del>	<del> </del>	
92									4										
02				*		1 7	2000							2.7	110				
92	Q2		ND	eta Linda	2.191	12 1 5 6 6 6	4 5						41.	100					
92	Q2	18	ND	1.70	2.00	51.0	11 / 1	1 7 4 4 4			10.		11						
02						4.4			7 77	·							<del>                                     </del>		
92	02								<del> </del>								ļ		
92											<u> </u>								
02											<u> </u>								
92		J2	ND	( A. A.		200	Section 1					100	18 18 17 17						
92	Q2	J3	ND		1	Sacration 6	10 TH 9 TH	STATE OF LAND	. 30			N 955	1.0		6 Tees   1 T	7.7			
92				100	No. 23 8	975 LAT 14	400 (32)	4.7.2874.557		3.4 SA	44,017		1 61 667	5					
92		15			275 33 50	1951	10 K 10 K 10	234 205 A 205	10, 9000	5 0 7 7 1			27.57.53						
92				4			3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0		3 3 3 1 3	-		7							
92								2011 1974 2014				4.500							
92 .9 NO					5.00 (0.00)	A ATT TO SER	2015 L. 20y		130 7 5 6	19.5 4.6	(1) kg/m								
92 .9 NO	Q2	J8	ND		547 NO.	24 × 30	Zali Property			2.7%	7 7 7	1 1 100	7 3 7 6	5 1 1 1					
92   350   NO		J9	ND	\$ 100	. 10	400 0 507	7 - 10	g 41 - 14 - 17 - 17 - 17 - 17 - 17 - 17 -	S. 100		7. 1	- 24				7 1 1			
Qui A1 ND				er ingelig															
Q4	- 04			1.0		-	7. 40.										<del>                                     </del>		
Q4   A3   NO   NO   NO   NO   NO   NO   NO   N								*****************			7	5 3 1 /s	2 19 1 4 K				·		
Q4				10 10 10 10	20 10 20 20	A				100			200		T- 1				
Q4	Q4	A3	ND			100	1. 1. 1.	1.1			W 1/2		7 7					1	
Q4	04	A4	ND				- Page 2 47	1 17 7 HE W										<del></del>	
Q4				7				7				<u> </u>	100	<del> </del>	<del>, , , , , , , , , , , , , , , , , , , </del>	<b></b>	<del>                                     </del>	<del> </del>	-
94 A7 NO					<del> </del>	<del>                                     </del>			-	<b></b>		<u> </u>					<b>—</b> —		
94 A9 ND	<u> </u>			<del></del>		<del></del>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				27	<u> </u>					<b></b> _	L	
94 A9 ND							91 JA 1975		1								أحنا		
94 A9 ND	Q4	A8	ND	A 19.	St S. F. F.	4.390, 20.2	5. 00 - 92 S		15, 44.7			<u> </u>	4 1			F 10 1	1 1		
Q4				1000	J. J. 184	Sec. 134	11 W 132	BUDY OU AL	47 1. 1/4	707 e ni	20.00	\$17			TV. THE ST.				<del></del>
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04 82 ND				5 7 7 7	1000		1000		-				<del>                                     </del>				Z		
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94 B4 NO						1,000,000		V (2 1 2 4 1 1)	31,211,22	14.6. [3]	3.75				nga laga Maranakan	# 40 Tu			
04	Q4	B3	ND	** * * * * * * * * * * * * * * * * * *	Sec. 31 (4.78)	11.45672	1296	Droplan 5	10.6%		25. 3	40.59	Supplier			34 743	14.74		
04	Q4	B4	ND	Q 2014		173 1571		874377437	A 15 A			(.1.4	1 2 3 3 3	7.5					
94 88 NO				7		4		354 376 Julia	W						<del></del>	7 77 7			
Q4   87   NO						<del> </del>													
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04   89   NO	Q4			4 4 9				14	1,116		100		`				2 J		
04   89   NO	Q4	B8	ND			* . 15.42	latin Par		11 17 17			×	3.1						
04		B9	ND			1,742,17	357 . 41.	ger et als filler et als	Sec. 673				1,120						
044 C2 ND				11.75	3, 303 4 12	200	19 7 3.75												
04				2.7		4.7			1 1 1 2 2							<u> </u>	_		
04 C3 ND						1111	1.1				10								
04					14.34		Table 1972	Jan. 1982		9.5%	2.5		20 May 1						
04	Q4	C3	ND		500 500 1		100	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	9		. 31	475.00							
04	04	C4		4 KM 4 E	11, 14, 130,	4 2 m 1 m 1 m	3413 4		4 t p. 1 t	17, 11		100		- 7			<del> </del>		
Q4    C6    NO	04	C5				10.00	7 St. 5 1 34 7 4		7.70								· · · ·		
94 C7 ND												11371							
Q4         C8         ND						186.5		10 32 GH, 15				200		200	A CONTRACTOR OF THE SECOND	- 2			
Q4         C9         ND							100		1,141.74	100	5.1	10000		$y \mapsto y^{2g}$				14.	
Q4         C10         ND	Q4	C8	ND I		<b>的</b> "国际特		12 21 3		1927 - 20	1 - 125	4 4 4 4 4	100	e .	75, 775					
Q4         C10         ND	Q4	C9	ND				N. N. 11 N.		2.55		1,777	1,000						-	
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Q4         D2         ND	04				1. 3.4					-				<del></del>		-			
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Q4         D6         ND         Image: Control of the contro	04	D5	ND				7 Table 128	40 Au 110 AV	75		1991		. 77 . 12						
Q4         D8         ND									100			-			1977			<del></del>	
Q4         D8         ND										200		<u> </u>							
Q4         D9         ND         Image: Control of the contro						<del> </del>			<u> </u>		<b></b>	ļ				<u> </u>	ļ		
Q4         E1         ND									L										
Q4         E1         ND				1 1 1	<u> </u>		JR17 1		<u> </u>	L	. 7	. 2					-		
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Q4         E2         ND				1 4 1 1 1			F1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	453) - 454 T		7 77.31		1						·	
Q4         E3         ND				a ang ar sa	1 8 July 1 1 1 1 1 1 1 1	F 11 (12)	7 - W. J. W.	3 3 3 4 3 5 T	345 15	7 V		- <del></del>				<b></b>		<b>-</b>	
Q4         E4         ND				1000	<del> </del>	-	-			-	744 64	-					-	<del></del>	
Q4         E5         ND						-									- 10 Maria		<u> </u>		
Q4         E6         ND				199				16.00 St. 128.00		100									
Q4         E7         ND			ND				J. 18 1148					214							
Q4         E7         ND	Q4	E6	ND			A 1 4 5 4		11 A 14 S 14 S											<del></del>
Q4         E8         ND				-				V 1 5 7 7 7 7				T	<b>—</b>		<u> </u>		<del>                                     </del>	<del>                                     </del>	
Q4         E9         ND								7.3832		<del>                                     </del>		-	<del>                                     </del>			<del> </del>	<del>                                     </del>	<del> </del>	
Q4         E10         ND					100					<b></b>				ļ			<b></b>	<b>—</b>	
Q4         F1         ND										ļ		1					ļ	<b> </b>	<b> </b>
Q4         F2         ND				No. 1									11		the state				L 1
Q4         F2         ND	Q4	F1	ND	** - * * * * * * * * * * * * * * * * *	1000		1. 10 5 . 34		194			1.1	1.						
Q4         F3         ND         Image: Control of the contro				77.74.7		1000		10 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m 1 m			30.00	7 7 7					l		
Q4         F4         ND												<del>                                     </del>		·			t	<del>                                     </del>	
Q4         F5         ND				23.7			<b></b>	<b> </b>	<del></del>		<del></del>	-	-		<del></del>	ļ	-	<u> </u>	<b> </b>
Q4       F6       ND   <					<u> </u>		<b></b>		<u> </u>				<u> </u>				ļ		ļ
Q4         F7         ND					<u> </u>														l
Q4     F8     ND          Q4     F9     ND          Q4     F10     ND          Q4     G1     ND          Q4     G2     ND          Q4     G3     ND          Q4     G4     ND          Q4     G6     ND          Q4     G6     ND	Q4				أخسنا					L		E. 27.	<u> </u>						
Q4     F8     ND          Q4     F9     ND          Q4     F10     ND          Q4     G1     ND          Q4     G2     ND          Q4     G3     ND          Q4     G4     ND          Q4     G6     ND          Q4     G6     ND	Q4	F7	ND		1. 1. 1. 1.			A 21 (484°19)				5 10 5							
Q4         F9         ND					and the same	Sec. 17.47		Participant	- 1777		17.77					· · · · · · · · · · · · · · · · · · ·	<b>-</b>		
Q4     F10     ND									<del></del>		-	200				ļ	<del></del>	<b>—</b>	<b></b>
Q4     G1     ND        Q4     G2     ND        Q4     G3     ND        Q4     G4     ND        Q4     G5     ND        Q4     G6     ND        Q4     G6     ND							<b></b>						1			ļ	ļ		
Q4         G2         ND				10 02			N 835 75	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1.							<u> </u>	L	
Q4         G3         ND            Q4         G4         ND            Q4         G5         ND            Q4         G6         ND				9			<u> </u>				أنسا		1.5					L	
Q4         G3         ND            Q4         G4         ND            Q4         G5         ND            Q4         G6         ND	Q4	G2	ND	1 1 1 1 1	2000	1,174,567	1.00	January Villa	151	1.00	977	13-37	S	1.			1		
Q4         G4         ND            Q4         G5         ND            Q4         G6         ND				30		F8.00. F 1		Propries	0.00	3 7 7 7	1 70		10.00	7.7	·		t		<del></del>
Q4         G5         ND         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				1.11			1	72 Y 18 72 74 1	7 7700	100		-				<del></del>	<b></b>		<del> </del>
Q4 G6 ND 41							-	<del> </del>	1 / 1			<del> </del>				<u> </u>	<b></b>	<b></b>	
						S. 10 10 1											ļ		
							J 5 7 5 6	11 1 14 14 15	St. 1	1000			L				L	41	-7
D0-440	0412-003	BA-00037_27	71300244-000	9_TEM-ISC	_AR_06-25	-13_I_NotQ	C_C0.xlsm;	DATA ENTRY	2										

ERROR CHECK EPA SAMPLE ID: BA-00037 LAB SAMPLE ID: 271300244-0009 Air TEM-ISO Prep Indirect
QC Type NotQC Matrix Analysis Method OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date
6/26/2013

Target Sensitivity Beached Complete our QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

		Reached-C		urrent GO,	then stop	)		7/1/2013				•						
Grid	Grid	Structure		tructures		sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
	Opening	Type	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)
Q4 Q4	G7 G8	ND ND		10 10 10 10 10 10 10 10 10 10 10 10 10 1														ļ
Q4	G9	ND					e izze e zasele. Za o o o o o o o o o o o o o o o o o o o			13 24						-		
Q4	G10	ND	A	W 0.17 13.				S	5 2 E	7							<b></b>	
Q4	H1	ND		200	11.50	7 3 1					7 57							
Q4	H2	ND							100	10.0	2.71		- 3			-		
Q4	нз	ND			क राज्यों स	1000	7.14.5.494	11.0			1,7,7							
Q4	H4	ND		90 T 1-3 T.		40.00						4,111,111			1 21			
Q4 Q4	H5 H6	ND ND		./	1 5 2 5 1 5 1 7 5 4 5	2, 4, 9,			7 7 7			7	4				<u> </u>	
Q4 Q4	H7	ND				100											<b></b>	
Q4	H8	ND								1						-	<del> </del>	
Q4	H9	ND						- 150			100	100	G eg e				<b></b> -	
Q4	H10	ND	1	1.74		6. 5. 15.			1872									
Q4	11	ND			90 . Al		i Burn Art	. + 7.1		4		4 - 4	1 1 1		100			
Q4	12	ND		7. 55%	924,075,13			750 c. 14			V 14547		\$11.1V					
Q4	13	ND		10 10 10 10 10 10 10 10 10 10 10 10 10 1	9.53 (4.6)	2,36475 7 7 5 2 2 2 3	<u> </u>			4.	2.50	100						
Q4 Q4	14 15	5 5			5 10 10 10 10 10 10 10 10 10 10 10 10 10			4 9/3 v 76			1000							
Q4	16	ND				a my katalog a sala. Taga a Maria							1.11					
Q4	17	ND			100						ببنسيا							
Q4	18	ND	S. A. MANA		13. 7	4.4	V <sup>4</sup> 44.41.N	100			77.5	1 1 12	3 (4) (4)	-				·
Q4	19	ND		1.18 45.55			n jihan kemili	38 3 4 4	1,21,24						. 1			
Q4	l10	ND	1 18 M. M.	2.50 3.75	5.44 - 721	34.5% 医室	<u> </u>	741,748			5. 5. 5							
Q4	J1	ND	F 250 F	34 50			949 1 14	13.00		41.	3 24 17	4.4 (2.2)						
Q4	J2	ND			er i Selag sekr Liker	38 38		34 4 5 7		A	2							
Q4 Q4	J3 J4	ND ND		1997 - 1973 1977 - 1973 - 1973				28, 376	- 27		7 10 7		ļ					
Q4 Q4	J4 J5	ND ON				7					-				ļ		<b></b>	<del></del>
Q4	J6	ND	654.64			1000			34 75.	7 7					<del>                                     </del>		<u> </u>	<del></del>
Q4	J7	ND	21.1 ERG	75.57	47 7 T	1,800,000	88 S. S. 756			7 4 L	0 98	X 3 5/4			l			<b>———</b>
Q4	J8	ND		77.52%		E 69   102	Property Control	76. J.V.	25	1,17			100					
Q4	J9	ND	5 77 5 36%	2000		4085 YE	\$15 ( ) ( ) ( ) ( ) ( ) ( )	4, 417	23.3	547 - 67	7.579	10.50	2 50 300					
Q4	J10	ND		14 1 15 1		\$140 E. K.		$f_{ij}(x) \in [y]$	263.74	4,455	16-1-419-46		- ( 117					
Q6	A1	ND		96,757,51	8.7	6551A38	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	100	50 9987		100	4000	200			1.6		
Q6	A2	ND ND				X352 X37		- 1 V N V N			2000				5.74			
Q6 Q6	A3 A4	ND ND		2000 July 1		3 - 30 9		30 M			(0,02 (25)		100				·	
Q6	A5	ND							350 300	73.74	3 1 6 7 4 18 1 6 1 0	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
Q6	A6	ND	5 - 65.75	7. N. A. KW	105.30%	40 H 3 A 9	1 4 3 4 4 5 7	A 22 As										<del></del>
Q6	A7	ND	ra filipina sa	1000	40 - 25 (2)	100	1111/19		70 AS.	177	7/4 7/7	471	1000					
Q6	A8	ND		21 great		VA, 194		System X	24.4	1 1	14 1997	7-1	1.73	WAS SEED OF SEEDS		. 5		
Q6	A9	ND	7.364	3.1		646,43	908 T. W. J. SAM			18 g (18)	1000	200,000	3827					
Q6	A10	ND ND					4.00	<u> Y 15 6</u>	124			5	13					
Q6 Q6	B1 B2	ND ND						e De Live de la companya di la comp Reference di la companya di la comp	12.13		27 (187)							
Q6	B3	ND	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- A		6 97 6 2 9						A						
Q6	B4	ND	1.00	4.8		A. 2 - 75		V			12 (23) 14 (14)							<u> </u>
Q6	B5	ND	26/16/20		N. V. S.	87.75.33	ALL REPORT	37572	10 10 10	444	2773							
Q6	86	ND	59 PV 10	2018 87	17436 11136	5,974,931	< 1978 N.A.	1343	124.45	75, 75.		40, 7, 90				+ 7		
Q6	B7	ND		47 (1964)		20 YO W	这个人为2年			100		12		Fig. 184 Supply and the Control				
Q6	B8	ND				1482 98		40 AV			4.4							
Q6	B9	ND						A1 11 1						<u> </u>				
Q6 Q6	B10 C1	ND ND		7 1 1 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 5 5 5 7 5 6 6		100 mg		304 J					ļ			<u> </u>
Q6	C2	ND	4.5	370	74 N SA	W. 1897.7	**************************************		7 J		1 70	<del>                                     </del>			<b> </b>			
Q6	C3	ND	M HIPA	alter Alba	Avenue (1)	35,755	X 30/0 79/00	4,000,000	1.19	Zigi X.								
Q6	C4	ND	. 1 1 2A	4 SE 100			RAP 15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	15 pt 18	v 1 1/2 1	132 758	1.8							
Q6	C5	ND	per Colombia	\$1   1.540.55	200	V <sub>E</sub> MEA	5273 A S.E.	\$6.3 °C				7 -						
Q6	C6	ND	4 (1)					4			7.7					7 · · · ·		
Q6	C7	ND		3 1 6 2 7		ur in last in Vi	3 40 3 W W	-										
Q6 Q6	C8 C9	ND ND				(2) (1) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	9 (Mar. 1206) 13 (407) 123 (80	<del>7</del>										
Q6	C10	ND	1	\$ 65, 187		<del>                                     </del>	7.153743.1537	35.0	3.97 (1.8)		F 31.49		55.79					
Q6	D1	_ND	75.75		- W. J. A.	100 W 3	1 Y - 7 - 1 1 7 7 8 1		70.1	12.00								-
Q6	D2	ND	14,200	10000	N. F. 197.		1,500,200,000	475.7		1.049	1 10							
Q6	D3	ND	100			(18 1 1)	1 2 2											
Q6	D4	ND			44 1 1 T				N. 7	3								
Q6	D5	ND				25.65		14.0k, 1.35		<i>x</i>								
Q6 Q6	D6 D7	ND ND	17 3 S				tion (Although the Although the		5 5 5 5		N. 1757							
Q6	D8	ND ND		7,81			63 63 A. B. 63,77 B. SA		7.3		7					3.77		<b></b>
Q6	D9	ND ND	7.1			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		2.32, 3.3					<del></del>					
Q6	D10	ND																
Q6	E1	ND				4 /					1.1	100	-					
Q6	E2	ND										21.5						
Q6	E3	ND																
Q6	<u>E4</u>	ND								31.57								
Q6	E5	ND		A			11 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 10, X (1)	25 5 6 4		33							
Q6 Q6	E6	ND ND				14, 27, 25, 25, 25, 25, 25, 25, 25, 25, 25, 25		10,400 CV 4,000 CV	2 (4.4)				2 2					
Q6	E8	ND ND	7		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 - 7 - 7 - 7 - 8 - 1		120 A				None Artist Anna Artista						-
Q6	E9	ND				7 3 3 3 3	7, 9, 11, 1	\$ 1 1 4 4 1									42	
~~							DATA ENTRY			7.			L		L	1		

			ERROR CHECK
EPA SAMPLE ID: BA-00037	Matrix Air	Prep Indirect	
LAB SAMPLE ID: 271300244-0009	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found
u (o.o. M. Cmith) ID Collector	0.4 5 7 7 4 6 77 7 4 6 77 7		

Data Entry by (e.g., M. Smith) B. Gallagher
Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO, then stop. QA by (e.g., M. Smith) M. Smollock
QA date 7/1/2013

O	raigor c			ompiete ci	urrent GO,														
GG 11 NO	Grid	Grid Opening	Structure					Identification					Mineral	EDXA		1 = ye	s, blank	= no	CH Not
00 11 NO				Primary	Total	Length	Width		L LA	OA_	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
08   F2   NO   NO   NO   NO   NO   NO   NO   N											<u> </u>		<u> </u>				<u> </u>		
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08				1111		19 3 4	Variable W	- 14 N-35	5	***. · · ·		-		100					
06		F6	ND		14 S. F. P.		1.50					4	7,775	V	7.71.7				
06   FP   NO   NO   NO   NO   NO   NO   NO   N	Q6		ND		1.35 497	+7 - 15,		100		17.16			N. 1						
06	Q6	F8	ND				100000		17 77			F 12 S	20 5 5			7			
08	Q6																		
09 101 NO	Q6					1, 100	<b>———</b>	31 11 2 2 2 2											
09   02   10   10   10   10   10   10   10	Q6			1		7.0				<b></b>			<del> </del>						
98					A 3.5	7.77					-						<del></del>		<del></del>
08						77				7.						<u> </u>			
06	06								No. 1 Tag		-		-						
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96 910 ND	- 00							. 1 44 45 4											
08 H1 ND							200 m 1888												
08 H2 ND	Q6					6 (1999)	1 2 6 2	138 × 1860 ()	12.00	4.5 (4)				4.35 3					
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96 H4 ND				5 5		1,4000,000	Mir et agili	8437, WY.			9, 75	· 783,	200	y 11 - 14					
08 H5 ND				3 S					171.75								L		]
08 H5 ND	Q6						. 7	4.5											
96 H8 ND	Q6	H5		. 5			10, 2,				- Ne . 4.	. *						l	
98 H7 ND	Q6	H6			S. 12	-0.1 A <sub>2</sub>					¥							$\Box$	
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G8					- 7	7.					<b></b>	l					<del> </del>	<del> </del>	<del> </del>
98 11 NO	Q6				100	100						7 /							<del> </del>
98   12   NO	06			7 .		70 mm	8 1 1	Sec. 17. 17									-		
98 13 NO	06										7 7						<del> </del>		
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08   17   ND	Q6						4.4.			200									
08   18   ND					2.0	4	4.5	100000				- 4							
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96	Q6	J3	ND		\$100 PM	Carlotting	4475				A	447.5	1144 117						
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G6         J8         ND				7 - 7	14 14 75								7 7 5	-					
Q6         J9         ND		J8				100				111800	- 1								
OB						4 6.0		2. 40.41.47	100		7 3 7							<del> </del>	
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08         A2         ND							7		9.177.17			- 5						ļ	
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Q8         B3         ND					20.00							15 50 7		, s = \$7.5					
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Q8         C4         ND           Q8         C5         ND           Q8         C6         ND           Q8         C7         ND           Q8         C8         ND           Q8         C9         ND           Q8         C10         ND           Q8         D1         ND           Q8         D2         ND           43					7-7-11	77,47,73	ALCOHOLD ST	7.67	1 1 7	77		4 James							
Q8         C5         ND           Q8         C6         ND           Q8         C7         ND           Q8         C8         ND           Q8         C9         ND           Q8         C10         ND           Q8         D1         ND           Q8         D2         ND           43									74 179		75.8					<del></del>		<u> </u>	
Q8         C6         ND           Q8         C7         ND           Q8         C8         ND           Q8         C9         ND           Q8         C10         ND           Q8         D1         ND           Q8         D2         ND           43				7 7 7 7 7	3 7 7 7	7 (8) (9)		1.6				100		-					
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Q8         C8         ND           Q8         C9         ND           Q8         C10         ND           Q8         D1         ND           Q8         D2         ND           43							- 14 J	1 2 2 2 2 2	5 (5.5), 34		2 y 1 4	10.5	<b></b>	Z- , 1					
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Q8 D2 ND Line 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						1,111													
112-003_BA-00037_271300244-0009_TEM-ISO_AR_06-25-13_I_NotQC_C0.xism; DATA ENTRY 2	Q8	D2	ND			4 4 4					7							43	

EPA SAMPLE ID: BA-00037 LAB SAMPLE ID: 271300244-0009

Air TEM-ISO Matrix Analysis Method

Prep Indirect
QC Type NotQC

ERROR CHECK OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date 6/26/2013

Target Sansitivity Basshoric Communications of the communication of the comm

QA by (e.g., M. Smith) M. Smollock
QA date 7/1/2013

	Grid	Structure	No of C	urrent GO, tructures		sions (a)	· · · · · · · · · · · · · · · · · · ·		14:			r						
3rid	Opening	Type	Primary				Identification		Mineral C			Mineral	EDXA	Comments	1 = ye	s, blank	= no	CH N
			Primary	TOTAL	Length	Width	,	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted
28	D3	ND				Av. 11												
38	D4	ND			1.75			15.45			1.47		100	A your				
Q8	D5	ND	<u> </u>		7.2	20, 1981, 15				100								
Q8	D6	ND	. :		4-1-15 m		tall the second	485 / T					1.0					
Q8	D7	ND	. 49	100			1 14 14	2			5 1							†
80	D8	ND			7 11 7									<del></del>	<del></del>	_		<del> </del>
Q8	D9	ND		18 8 4					·							·		┼──
Q8	D10	ND						-				-		<del></del>		<b> </b>		—
Q8	E1	ND										ļ					ļ	<del>  </del>
Q8	E2	ND				4. 4 1 2										ليسل		<b></b>
	<u> </u>							12			100							
Q8	E3	ND				74. Sec. 344				5,375,375	1.55	7 1 1 1 1 1	1 July 2	4.0			-	]
Q8	E4	ND	20 20 30		1 - A 10 AV 4	A 25 (4)	Algorithm and	100	1	3.00	1 1 4	77 70	120					
Q8	E5	ND							7	77.5	A					1.0		
Q8	E6	ND	17.1	3814 337	100	4 345 87	1,1,445,875,83	10.00		1	100		14.1					
Q8	E7	ND	1	18 12 17 18 18 18	30.00		2017/12/18/59	77.3					9.00					<del> </del>
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Q8	<b>E</b> 9	ND		40.00	1.5% (6)		344		0.1							$\vdash$		<del> </del>
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												ļi				ļJ		1
Q8	F1	ND	4 644				<u> </u>	2 - 2 - 2 - 2	1. 17.1	21.1								
Q8	F2	ND	- 4		2 6 6		Light State of		4 - 3		4 3 5							
Q8	F3	ND	1.42	1 8 1 1 1 1 1 1				1.0			100							
Q8	F4	ND	/ 1	3 3 4		1 Table 1							24			<u> </u>		
Q8	F5	ND		<u> 14 / 14 / 14 / 14 / 14 / 14 / 14 / 14 </u>		5 5 5 5 5	t 100 per a see	121 - 127	We tall	100	2 - 26					<del></del>		<u> </u>
Q8	F6	ND		1000000	0.000	V 012870	14. 11. 14. A. L. L. L.	24.5	- 5	7.	6		-	A	<del></del>			<del></del>
28	F7	ND		Arrest St. V	F 14/57 14	2 12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	\$215 green		<b>-</b>	30.00	1 1 2 2					<del>  </del>		$\leftarrow$
28	F8	ND	177	200 100	-	300 000	rabiliti di Salah (1907)	-					<u> </u>			<b> </b>	<u></u>	<del> </del>
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28	F10	ND		9 8 157	3 8 7 8 7 C	50.00					2.1.69							
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38	G2	ND				ve le 2.			1	( ) ( ) ( )	4	777			5			
28	G3	ND		17 AV		45 5 38	[왕왕] : 기사 [					0.1577						
28	G4	ND	7.7	all syn is		A 14 P.	Section of the	y		4 7 7 7	7		***					<del>                                     </del>
28	G5	ND	(41)	10000000	W 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	800 P. S.		300		-	7.7	777	:		<del></del>			$\vdash$
28	G6	ND	1.0		S12 / W										-	/I		
28	G7	ND				7		-								<b> </b>		<u> </u>
28	G8	ND				2.0		3.73								<b> </b>		<b>↓</b>
			9 14 9 Co. 1		36 7017 S			2 2 7			18.0						4.1	
28	G9	ND		2						CAPTER TO		3, 1, 1, 1	4 m gr					
28	G10	ND		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		3 - 1 - 1 - 4 - 5					. 1		5 7 7					
28	H1	ND	100	20 N. 12 T.	al Bukija	11.8 24		11 1 11		1	2 10 10 11	77						<del>                                     </del>
28	H2	ND		17.18.74		1	20 to			6 .7	74 T F	5 . 5						$\vdash$
28	H3	ND	17 - 11 12	100		2000	A 1 145 1 1 1 1	7.7			1.07							<del></del>
28	H4	ND	5,13		र्जेप्टा अस्ति	9 1												-
28	H5	ND		7 1 (A) 1 (F) 17		194 (pr. 113)				1 0		7.4						
28	H6	ND		7 7 7 7			5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 - 7 - 7 - 7		20 Miles	3.1.2.3.	N. N. W. S.		Benediction of the second				L
28	H7																	
		ND									11 11 11							L
28	H8	ND						2.171.0				1.192.2	5		200			l
28	H9	ND								41.1	1. 1.	31.3						
28	H10	ND	50 (4.7)	With the second	3.50		2. 3.35.52	2	151 V			1000		19.35				
28	11	ND	3 - 2 190	1000	3.5 A.	3.44		1 1 1 N										
28	12	ND	Tall 1 (1)	1,000	3. St 4. A	11 18 19 1	15 3 3		7			1 11						$\vdash$
28	13	ND	41 4 15		7.7						7.17.			Tale of the second				
28	14	ND	1000		377							<del>- 4 - 1</del>						<b>-</b>
28	15						<u> </u>					13.5						L
		ND				2 2 2					1 1 2							<u>L</u>
28	16	ND							لنبط				I					
28	17	ND							35.77									
28	18	ND	لتنب	<u> </u>		1.10		100			- 1876			<u> </u>				
28	19	ND		0.0	97 8 T 167	85 F 186	1. 14 s et 19 e s	75.00	5.00		47.7	W					-	
28	110	ND	17 - Pag-2-15	JOSEP (ACM)	S 1944	g. 1 34.75				7 - 1	3 7 7 7	11.0	100	NO. TO SERVE				
28	J1	ND	2 3 3		F111	\$35,000	\$ 19 75.76	31 1 1	117.0		4.5	1	7.				-	$\vdash$
28	J2	ND	- 1 A	V 1000		3.00		17 7 1 L	7		W 13.5	7 12650	<del>,  </del>					
28	J3	ND			100	<del> </del>					100							
28	J4	ND			30.00	·												-
28	J5	ND			3-20				<u>  </u>									<u> </u>
28	J6	ND ND		- 1 AST	1 1 1 1 1 1 1			3 7 7				<del></del>						<u> </u>
28	J7				2 2 7 2								1					<u> </u>
		ND ND								1								_
28	J8	ND								70			احينا			T		
28	J9	ND		3.00	9 9 8	<u> </u>	graphs and	2 11 11										
28	J10	ND	1000		2012	55 + 25 58 1				T								
10	<u>81</u>	ND	20 May 17		3 1		<u> 1900 - </u>											
10	B2	ND				· *	7 7 7 7	\$ 100 °		3 3								
10	В3	ND		4 1 3 3 4		A 1 1 1 1 1 1	Sec. 2. 4	7										
10	B4	ND	10.7			A 57 A 1		7 47 57		<del></del> +	-		<del> </del>			$\longrightarrow$		<del></del>
10	B5	ND	March 1	7.74	10, 10, 2, 12	3 3 3 3	1000					<del></del>						
10	B6	ND		100 100 100														
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10	B7	ND ND				1		30.00			(J.42, PA)	get to the	5 1 5	ALLEY OF A STATE	T	T	7	
10	B8	ND ND		21.5.15				22 5 6	I									
10	B9	ND	41		1 1 1 1	100	<u> </u>				113	4 - 14 - 1				$\overline{}$		
10	B10	ND				9-4	say jirin sa			- T		7.00		a Tarangan				
10	C1	ND	3 THE R	48,170			F120 5449	1,355		77.2	7 7 7				<del></del>	<del></del>		
10	C2	ND	,		()	ar. 1 - (17)(g)	S. 8.	7.0	0.75		-							
10	C3	ND	d 5 (8 m)		3 3 3 7	N 6. 3. 4												
10	C4	ND		200		7 3 3 3 4								-				
10																	احبيا	
	C5	ND					DATA ENTRY 2						<u>.</u> ا				44	
202 2				4 DE 3E	- 2 1 NIA+OC													

 EPA SAMPLE ID:
 BA-00037
 Matrix
 Air
 Prep Indirect

 LAB SAMPLE ID:
 271300244-0009
 Analysis Method
 TEM-ISO
 QC Type
 NotQC
 OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date

G/26/2013

Target Sensitivity Reached-Complete current GO, then stop.

Second   S	larget S	ensitivity i	Reached-C	omplete c	urrent GO,	then stop	)	<del>,</del> .											
100   CC   NO	Grid	Opening						identification				NAM	Mineral	EDXA			s, blank	= no	CH Not
000 CZ NO	010			Timilary	1000	Cengui	VVIGUI	la filologia	<u> </u>	UA.	CH	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EUS	Counted (e)
900 25 NO						749 749	50 12 7	200 A 11 A 12				-						<del> </del>	
909					7 7 16 5 75													<del>                                     </del>	<del> </del>
19				7. 7. 7	Charles III	4000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7.34.30		74 3.7		7773			The sales of the sales	-	<del>                                     </del>	<del> </del>	
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0.00   0.00					et a			The Wall	2 5 5 12	Section 1	1.00	10 Jan 14	1 1						
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0.00   0.00	Q10			14 / 14				A	134 A H	10000	74			2000		5.1			
Group   Color   Colo				<del></del>	7						4. 1	- 12						<u> </u>	
Q12						10 10 10 1					7,47						<u> </u>		
QB					<del>                                     </del>	7.7			-								<del></del>	ļ	
1919   1919   190   19															<del></del>		<del></del>	<del>                                     </del>	
0.10	Q10			27.497	1 1 1 1 7 x	7		31 ST - ST - ST 1 ST	14 m 14	1186 - 2		4 7							
019 E2 NO	Q10						a de						9.00			4 1	2.7	<b></b>	
100   E4   NO				e Neilea V		15,400	2 4 80 8	1000	17.78 19.5	S. 1 . 49				A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
September   Sept					W 14 1 502		1000			attyr i A			7197	9.3					
019   E8   NO				1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		11/19/		3 1 3/2											
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G10   E8   ND																	ļ	<del> </del>	
G19   E8   ND						11 12 25			1 2 2 2								-	<del> </del>	
1010   E91   ND					9 - 1 7/19 19	100												<del> </del>	
STOP				arrive.			Zo este <del>i</del>	12 / 12 / 13	1 1 4			3,000	l .			<b>———</b>	<del> </del>	<del>                                     </del>	
1010   F1	Q10	E10	ND	1000	100	ej Pal	8 L 2	6,9719 (4.74)	7.1			9.75	S. 15	<b></b>			<b></b>	<del> </del>	
1010   F3   ND	Q10	F1	ND		. A. R.L. S	81 53 7	May 1	1, 10,443	A. 47 B		.75 Q	1. 17		2.5					
G10		F2				1, 11	Z 1				97.5					·			
C10   F5   ND				111		202.00													
C10				-	1	(3) (1) (1)				<u> 7. – 14.</u>			1 - 2 - 3						
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C10	010				300	***	W					A 7		1 11				<del> </del>	
Color   Filo   NO						45.5			17.7	74.4	797 1						<u> </u>	<b></b>	<b></b>
Q10   Q3   NO				7.7	1.00												-	<del> </del>	<b></b>
G10   G3   ND				174. 3		147 877		igh timba iya		100		20.00		1 10 100				1	<u> </u>
G10   G4			ND		- 100		7.1	1. 广东南美	1.15 44.1	4 V. H.	1.7	1.57		4000				7.1	<u> </u>
G10   G8   ND					5 4 4 17	80	40,040	<b>可能源的图象</b>			1	(Frank	200	A 7.7					
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G10   G8   ND				1 .44.08			**************************************				5 (1	2.5				<u> </u>			
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Q10				7. 7. 1. 1.	1.5	\$ 17 Ask			7. 3			7				<u> </u>			
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Q10         14         ND            Q10         15         ND            Q10         16         ND            Q10         17         ND            Q10         18         ND            Q10         19         ND            Q10         19         ND            Q10         11         ND            Q10         J1         ND            Q10         J2         ND            Q10         J3         ND            Q10         J3         ND            Q10         J5         ND            Q10         J5         ND            Q10         J6         ND            Q10         J7         ND            Q10         J8         ND            Q10         J9         ND            R1         A1         ND            R1         A2         ND            R1 <td></td> <td></td> <td></td> <td>7.3</td> <td>145 July 2</td> <td>3,4,78</td> <td></td> <td>the Esphis</td> <td>of Tarrica</td> <td></td> <td></td> <td>2 3 53</td> <td><u> </u></td> <td>14 .</td> <td></td> <td></td> <td></td> <td>l</td> <td></td>				7.3	145 July 2	3,4,78		the Esphis	of Tarrica			2 3 53	<u> </u>	14 .				l	
Q10         15         ND				1000	3.14	MA AND	a signalia					1	\$ 100						
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Q10	Q10	J2	ND			: -	4 11 11	Tara yaran											
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Q10         J6         ND					Vendig Arab	12 (32 (20) 1 (33 (34)				4									
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Q10     J9     ND       Q10     J10     ND       R1     A1     ND       R1     A2     ND       R1     A3     ND       R1     A4     ND       R1     A5     ND       R1     A6     ND       R1     A7     ND       R1     A8     ND						<del>                                     </del>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			14,641,548		7 - 4					<u> </u>	<u> </u>	
Q10         J10         ND           R1         A1         ND           R1         A2         ND           R1         A3         ND           R1         A4         ND           R1         A5         ND           R1         A6         ND           R1         A7         ND           R1         A8         ND						7 3				1 1						ļ	<del></del>	<del> </del>	ļ
R1 A1 ND						5 5.	4 th 10			120								<del> </del>	
R1 A2 ND					Z		1	Salar Salar				7 77					<del></del>	<del> </del>	
R1 A4 ND	R1			1 TELL 1			. 3.4		, i -		3.5			,		<del></del>			
R1 A5 ND R1 A6 ND R1 A7 ND R1 A8 ND A45				Variable 1			11.75 (1	ALM X BES	1 5 75	-45 J	3.7		4.78						
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				- C	<b></b>								ļ					15	
				0 TEM 100	AP 05 25	13   11-10-	0.00-4	DATA CLITC		1	·					لـــــــــا	<u> </u>	<u>+</u> 5	

EPA SAMPLE ID: BA-00037			ERROR CHECK
EPA SAMPLE ID: BA-00037 LAB SAMPLE ID: 271300244-0009	Matrix Air Analysis Method TEM-ISO	Prep Indirect QC Type NotQC	OK - No errors found
(a.c. M. Smith) D. Collector			

Data Ent	ry by (e.g.,	M. Smith)	B. Gallagher	QA by (	e.g., M. Smith)	M. Smollock
		Entry date			QA date	7/1/2013
Target S	ensitivity	Reached-Co	mplete current GO,	then stop.		
	Grid	Structure	No of Structures	Dimensions (a)		Mineral Class (h)

1	Grid Structure No. of Structures Dimensions (a) Identification Mineral Class (b)					T												
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral	EDXA	Comments	1 = ye	s, blank	= no	CH Not Counted (e)
R1			Timilary	1 1000	Lengui	VVICUS		LA.	_ OA	CH.	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
	A9	ND.				<del></del>												
R1	A10	ND				1.75				<u> </u>								
R1	B1	ND			Sylver St.		i segur si											
R1_	B2	ND		1.0			3 5 85	35.5	2.0									
R1	B3	ND		The Car		1.1						A						
R1	B4	ND		2 g 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	19	A 1 A 1		100		1								
R1	B5	ND		7.	11 1	200	7-8-7	4										
R1	B6	ND	37	4.1							20.0					<del> </del>		
R1	B7	ND							74 1.1			<del> </del>	2.44.1			<del> </del>		
R1	B8	ND		2.50								<del> </del>				-	·-	i
R1	B9	ND										-						
R1									40.00									
	B10	ND					100 May 11	3.0		Section 1	75.25		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
R1	C1	ND	200		96.96, 153	1000		8 8 Yes		#17 1								
R1	C2	ND				100		41 - 34	2 -									
R1	C3	D	2.00		ta a partition	1.0					V	1						
R1	C4	ND			7 1 4 1			1			100							
R1	C5	ND	20 to 3 N	11 7.5%		200		40 - 177	1 11							_		
R1	C6	ND	14-3-		10 12- 24	4.050 E	43300	1777			100	7						
R1	C7	ND	1000	199750 55	58 (08/set 13%)	27 1 27 2	27 7 8 60 7 . 50	1947 19		7 (21.5%)			3.7.					
R1	C8	ND	1000		7 (2.27 / 7.24)	4 30 5	7 1 1 2 X 1 1 2 3 3 3 3 4					A CALL OF THE				-		-
	<u> </u>			A Francisco Companyo	10 10 10 10	Color State		3/1-2				20 27 14	V . A.	4		<u> </u>		
R1	C9	ND		270 300 03	79, 6969	733 30 73	3 6 5 6 6 7 7 7 7	100 2 6.3	7	31.59	1.37.							
R1	C10	ND			7 5 5 1 7 5 5	* A-30 IS 104	\$10 SOURSE	\$ p. 1					1.57					[]
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R1	D2	ND		2.58 ( a. 1) ( b.		5,50m a d	A. 36 (19)	350 1 5 7		3, 4, 5	200							
R1	D3	ND	. 441 4.8			4 A				at gaily			<u> </u>					
R1	D4	DA			1.471.77			Fa F 75.5	. 1 11	V11	1 17	5540	- 1			l		
R1	D5	ND		500 NO.	1 X 3 3 3 3	article Vi	24 V 344 L	1.75		o 1 - 1		1000				<del> </del>		
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R1	D8	ND			l	<del></del>			<b>—</b>	-	-	<del> </del>	-	<del></del>		<b></b> -		<del> </del>
R1	D9	ND ND		<del> </del>		<del> </del>		<del></del>			<b></b>					<b> </b>		
R1	D10	ND		<del> </del>								1						
<u> </u>	510	ND	-								1 1 1							<b></b>
R1	E1	ND																L
R1	E2	ND		. 3444	2472 1 6		H114.04.0	2.0		1,7535	11 21 12		. 1					i
R1	E3	ND	are the		0.0	1994 I (815)			1.00	1984	Lvt. 1	100	5.41					
R1	E4	ND			5 NO 15	行为的对象			\$745°E	1.0	3 0 45	W 15, 6	7.70					
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R1	E6	ND			14 (4.3)	100, 100, 24					- N. 24	2000						
R1	E7	ND				3. 5. 5.					-			·		<u> </u>		
R1	E8	ND		7 - 7 - 7			7 1 7 2 1	7. 30. 44										
R1	E9	ND		100 KI 100		-						7						
R1	E10	ND				-					Z 25 1		11111	<del></del>				<u> </u>
R1		ND								P 744 1								
	F1	ND			4.32			5 7 11.2										<u> </u>
R1	F2	ND				3.7	3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			20.0	- C 1-1	4						
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R1	F4	ND		2,336	110111			200		1.11			2 T		4.			
R1	F5	ND			785	A 7 (18)		A 1 7 1	21 L	2		A 52.8	1					
R1	F6	ND			11 46 4	*	10 10 10 10	47 T	7.75		3.7			Barrier Control				
R1	F7	ND	100	6 2 7 2		ri maarii	500 500 6000		1 10 11	1.77	100		1,111					
R1	F8	ND	AC 1/411 (A)	St. 1. 189 11 1	1 3 5 5 5	35. (6)	11 W 17 M 14	V28 C. F.	3.11		777.		7 - 14		7			
R1	F9	ND	7.19		2 3323	11.50		146			. 21.4		- 7					
R1	F10	ND		J 11 74	# 1.872.5.c	1000	90 PM 1 PA	1779 82						The fact that th				
R1	G1	ND	Sold des			F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	yare to a st				2 7 17							
R1	G2	ND										<del></del>	<del>-111 (1</del>					
R1	G3	ND	100							7	-							
R1	G4	ND		A4 5 10 10 1	-						-				* 7.5	<b></b>		
R1	G5	ND	8 1 11 10 1									<del>  </del>						·
R1	G6	ND	1000	400			14 14 14 14 14 14 14 14 14 14 14 14 14 1					<b> </b>						
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R1	G7	ND NO			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					7 5 1	12.77	<b>  </b>			<u> </u>			
R1	G8	ND		100	77.75		<u> </u>			25 5 5 5				general designation of the second		]		
R1	G9	ND				52 1 27								v				
R1	G10	ND			1	3 1175			V 1									
R1	H1	ND		100														
R1	H2	ND				100		J. 25	F 1. 3		31.				25			
R1	H3	ND		- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			7 (v.)	P.M.Za				4 1.55			4			
_R1	H4	ND	11.7			100	# E18047.71	41,51%				7 - 22 - 1						
R1	H5	ND	(A) (B)	. 77 T. P. 124, 1	7 S. C. MA		\$3.7 GAZ	315 25	7,75	77. Tal	37.75	7.7						
R1	H6	ND	1000	14.5	1.00 (Fig.)	Aug Aug	784. 47.0g	959 ES			77.7	177.5						
R1	H7	ND	1 11 444	F13 1 46	17.7%	and the same		30 T 1 T		7.	1.1	7 7 7 7						
R1	Н8	ND		7.7		W. 31 3 3	174 34 4	71, 33	-		5	<del>  </del>						
R1	H9	ND		- 2		1.7 2.3						<del>   </del>						
R1	H10	ND			-							<del>                                     </del>						
R1	11											$\vdash$						
		ND ND		7 7 7 7 7		3,440,619,61												
R1	12	ND		2.5 (2.5)		1						14.63					l	]
R1	13	ND			4 1 9		2.55 (2.5.2)		54 [1]		15,223		1.1		]		T	
R1	14	ND	9 55 9 1		10000	<u> </u>	364 14 15			7	5 S.							
R1	15	ND		52 . 53		2.0		1.74		T								
R1	16	ND			3 8 7				11									
R1	17	ND				1.0	원 (주) 글 (4)				4 112						<del></del> f	
R1	18	ND		77 . N	10 700	14.90	्रिक्स स्थाप	4. X 5 T			4. 50							
R1	19	ND	20 July 17 Sept.	Align Egy	7 7 2	4 - 164-74	January (1911)	M. 1999	24 7/4		1.87	<del></del>			-			——
R1	110	ND		G 1 44	84 L. H.			78,77			1,11	<del> </del>						——-
R3	A1	ND				100 100			7 7 7		77.11						46	
2412-003	3A-00037 27	1300244-000	9 TEM ISO	AR OF 25	13 1 Not0	CD via	DATA ENTRY	·············				1 1 1 1	L					
	7/1/2013, 4:3		, -141-130		. 5_1_NOIGH	, xi\$i ii;	PUIVERIUGE	-								_	Page 7 g	

ERROR CHECK EPA SAMPLE ID: BA-00037 LAB SAMPLE ID: 271300244-0009 Air TEM-ISO Prep Indirect
QC Type NotQC Matrix[ Analysis Method OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date
6/26/2013 QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

Target S	Sensitivity	Entry date Reached-C	omplete c	urrent GO	then stor		Q/ Cato	7/1/2013				3						
Grid	Grid	Structure	No. of S	tructures		sions (a)	ld4:64:-	Ι	Mineral C	lass (b)		Mineral	EDXA		1 = ve	s, blank	= no	CHAR
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)
R3	A2	ND	6 B 18 B	1.1	1 Fee 3			J. 18	1.0									- Courned (c)
R3	A3	ND	100	5 1 2 1	12.127		4.4	100		7.55	2.5		11.11			<del> </del>		<del></del>
R3	A4	ND						1.00				100						
R3	A5	ND					Associate Section			421.								1
R3	A6	ND_					3,147.5			1.								
R3	A7	ND																ĺ
R3	8A	ND						3.5			<u> </u>			4.00				
R3	A9	ND.	2 4 4 4 4			100	10 May 19			-								
R3	A10	ND		3 44		1,26.5	1 1 / April 1		18.6	207	- 1							
R3	B1	ND			1. 2.54.23.03		<i>X</i>	4	1 10		-12.25							
R3	B2	ND ND		1 4				100		22.00								
R3	B3	ND			30-1-									·		<u> </u>		<u> </u>
R3	B4	ND ND																
R3	B5	ND						2.7	26.5	ļ			ļ	<u> </u>				
R3 R3	B6	ND			1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	A											
R3	B7 B8	ND ND		7 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7 3 3 3 3 3	5 3 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1												<del></del>
R3	B9	ND			1994 1,38 A			, 27 4 5	-		*** ****					ļ		-
R3	B10	ND						1 19								<u> </u>		
R3	C1	ND								<u> </u>	-							
R3	C2	ND							<del>                                     </del>	<u> </u>		<b></b>	<b> </b>	——————————————————————————————————————	<b>-</b>		<b> </b>	
R3	C3	ND		l			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	5 3000	<del> </del>	-	70.5		l		<b></b>		-	
R3	C4	ND		J. 1519 k.A		1 (4) 1 m	30 1445			<del>                                     </del>	119 7 7					<del> </del>	<del> </del>	<del></del>
R3	C5	ND			3,33,53,73	1 /A 3 / 2				-					-	├	<del>  </del>	
R3	C6	ND		1 15 10	3 1 3 4 4 4		S Alexandra	7 6 498	<u> </u>		3.1	War.				<del> </del>		
R3	C7	ND		100		7	<del>(100 - 100 ) (100 )</del>		<del> </del>	7.								
R3	C8	ND.				J. 1		-		7.77	12.5			<del>/                                    </del>		<del></del>		
R3	C9	ND		T	7		2 6 M 14 17		2.0					<del></del>	<u> </u>			
R3	C10	ND		100		3 2 3 3	i katilit	l :									<b></b>	
R3	D1	ND					8 1 M 18 1 1 B								-			
R3	D2	ND	19 18	100	A. 1. 1847	100	24, 15, W. W		Γ	11.	1 /500		1 1 TeV		l			
R3	D3	ND		<u> </u>	<u>_</u>	a.10.10.7			10.5V	3 1 3			1.57					
R3	D4	ND	4 10 1	12 12 12 1	1, 18,010						si A.j	12						
R3	D5	ND	9.37	47	Washington	F 94 94	3 3 4 5 7 2 7											
R3	D6	ND	Y 72 34	31 5 10		44.77		1200	8 1 1	2.1	10 to 10				l			
R3	D7	ND	5 5 15 28	e	St. 148 (19)	77 - 27		77 5797		7.747			1.1					
R3	D8	ND		1.74	1.50	2	10 S	4.		4.				***************************************				
R3	D9	ND		100					7.									
R3	D10	ND	100	ale Maria	40 J. 1784				1.17.64		1.00	e (* 159)	V19. 17.5	7				
R3	E1	ND		2011/06/04	sinsky ve	4100				30 - 12	4,409	14.00	Q. 3.79			7.7		
R3	E2	ND	- C stable		45,373	#-4 N.A.		$\omega \geq 1$ .		$X_{i_1}X_{i_2}^{i_1}$	5 5 8	97. 7		the state of the				
R3	E3	_ND	H-405 1975	a militaring	47. 18. 18	0940 1946			200	20,000								
R3	E4	ND			Sec. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	3.4. 195	6 84 6	(X, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	1,778.74		1,179	21 5 25	14.5					
R3	E5	ND				9-1-1-10-1		5672			4.53	120						
R3	E6	ND					3.40 A	9.										
R3	E7	ND			27 27 H-400	447		200	1 1 1 1 1 1 1		1 (1)	4000	13. 14					L
R3 R3	E8	ND ND																
R3	E9 E10	ND ND	7.0		2 700.7	100 to 140 to 150 to 15	A 100			(1) (1)		200						
R3	F1	ND				25. 9.5796		- 1971		*1								
R3	F2	ND								4.31	7	-						
R3	F3	ND	-		<del></del>													
R3	F4	ND			7 7 7 7 TE		7			327.7								<del>,</del>
R3	F5	ND			3.77 3.4 5		<del>- 17 - 27   14 - 18   1</del>											
R3	F6	ND	7.1.			1. 1. Sept. 1. 10				30.00		-			-	<del></del>		
R3	F7	ND	7 7 6 7	W 1	7 37 37 7	7/81		1000	<del>derei</del>	2000					<del></del>		$\vdash$	
R3	F8	ND		1 1 1/16	PART.	S. 18 855			4.57		J. 19 A.J.	4 1 1						
R3	F9	ND	31 1 1 1		4 1 1	9.5	walion of the same of	1000	788		200 6	F 4 2						
R3	F10	ND				Y		1 1	1		100	1.17.47						
R3	G1	ND	14 - 1 ×					2.114		1 an 1	4.145.7		4.4	***************************************				
R3	G2	ND	J. 188	70 m		<ul><li>4 (17.1)</li></ul>				1 1/2	1	194	1 1 7					
R3	G3	ND	1.15	3 24.1	141.5	5 2 3			115									
R3	G4	ND			S 744		e Milar y							<u></u>				
R3	G5	ND			<u> </u>	3 - 7 - 7 - 7	2.5		-	1,0								
R3	G6	ND	100		1 7 7 7	100	elet granist	<b>3</b>			1 1/2	3 4 6 5 6						
R3	G7	ND ND	1	s 1745, 5	2 - 1 Ja 17		28 (15 (28)											
R3	G8	ND	1.4	L						100								
R3	G9	ND				45/fags + 1			5 T 1 1	4		1 1 1						
R3	G10	ND ND								1.0		47						
R3	H1	ND ND			54 1 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		7 m 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		-		- 3/			<del></del>				
R3 R3	H2 H3	ND ND			100						*							
R3	H3 H4	ND ND			A 1.	100		1	11.7		7 (A)							
R3	H5	ND ND					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
R3	H6	ND	-								1 1 1 1			<del></del>				
R3	H7	ND		3.77						7								
R3	H8	ND												<del></del>				
R3	H9	ND				A		-			7 2							
R3	H10	ND	1. 1. 1. 1. A.	J. S. L. C. 15					1600									
R3	11	ND	400 Mg	7 , j de	1 10/12	N. KINNEY			£2-17 23			10 Y					<del>                                     </del>	
R3	12	ND		1000			va akje k	1. 1. 1. N		5,535								
R3	13	ND						21.7	-							<del></del>		
R3	14	ND															47	
412-003_[	BA-00037_27	71300244-000	9_TEM-ISC	AR_06-25-	13_I_NotQ	C_C0.xlsm:	DATA ENTRY	2		1					·			
innted on:	7/1/2013, 4:3	32 PM															Page 8 o	£ 10

			ERROR CHECK
EPA SAMPLE ID: BA-00037	Matrix Air	Prep Indirect	
LAB SAMPLE ID: 271300244-0009	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

OA by (e.g., M. Smith)

OA date

7/1/2013

Target Sensitivity Reached-Complete current GO, then stop.

Target S	ensitivity	Reached-C		urrent GO,	then stop	).												
Grid	Grid Opening	Structure		tructures		sions (a)	Identification		Mineral C	ass (b)	,	Mineral	EDXA			s, blank		CH Not
		Type	Primary	Total	Length	Width		LA.	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
R3	15	ND			1	J. 4 . 5	Alle a Maria		No.									
R3	16	ND	75	Services	2 7 1 5			1.0	1 and 31 in	7	15.75	10 Km (10 M)						
R3	17	ND	a established	7	300000	1.5 7/3	17 17 7 19		100		100	100						
R3	<u>ļ</u> 8	ND		A Section of	521 5 7	100	Argus N. C	200	A contract	7 14	3.5	1.4						1
R3	19	ND		100			25.50	1.7	100			1.0						
R3	110	ND		tura e l'Agri	W. 11.	10 g	1 1 1 1 1 1 1	1 miles		14.	14.7							
R3	J1	ND	7		\$40 May 14	1 20	W 20 F 18 7				1							
R3	J2	ND		100	111 141	36 36 37	Marin St. St.		-					1				
R3	J3	ND	1000		1.00								3 -					
R3	J4	ND				J.										l		
_R3	J5	ND	7					17 35 3										
R3	J6	ND		-					1.7						i			
R3	J7	ND	3.0	图, 1124 。	A F A	1.30	S 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				4 d				<b></b>			
R3	J8	ND	11 1 1 1 1 mg t	3550 LA		\$1.54 PM	Star Francis	527 638	100		150		7.5					-
R3	J9	ND		W/100 C13	4. A/Si			- 1,8%	\$ 250 0.00		4 7 37	25	3.00					
R3	J10	ND	11 11 11 11	1 1 1 2 1 1 2	1.14.17	1 147 20	4 ST 11 F	4. 14. 43	1	1119					<u> </u>	-		
R5	A1	ND	100	5-1		17 1 1 1	\$ 100											
R5	A2	ND	1000	destruction by							T							
R5	A3	ND	77 17 19	gray to the	73 N. E		se Spetie de	10 200	71.32		4.7.77	91 119			<del>                                     </del>	<b></b>		
R5	A4	ND	W. J. 3, 17	JA 45 .	14 1 617		SECTION SECTION	345 17										
R5	A5	ND	zirikus i jak		STATE.	V . 34	1.85,0868.00											<del>                                     </del>
R5	A6	ND	144.347	975 TELES	1 m 2 m 4	300000					7	4. 5. 6.	15 2 2 5		1 1 7 5		<del></del>	<del></del>
R5	A7	ND	32.5 338.35	1.60	La constitue		31 28 THE DATE:	11 6		A						ļ		
R5	A8	ND	40° 11' 15	4.44	7 - 6 17	11.75	grandari			1		1			l			t
R5	A9	ND		1 2000		. 'V	Y	1				1 1			<u> </u>	<u> </u>		
R5	A10	ND	9.3 7.5		. 445				T							<b></b>		
R5	B1	ND			5	1, 14 LD			1.7		7				t			
R5	B2	ND		Al Section	17-7	(Sec. 10)	Augustu b				4.540	8 8.1.			<u> </u>			
R5	B3	ND		机等压缩		100	119774 1991	1,50%		20.0	74.3	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	100			<b> </b>	<b></b>	
R5	B4	ND	1000	A State 1	P. Fan	JAPAN	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	\$5 . S.S.	100		. 10.00				1			
R5	B5	ND	11.12.57	10 P	6.	2 - 63-147.	80471000555	10,74			1.00	18 1 18 10	300 833				<b></b>	
R5	B6	ND	89 19 17 L	March 1980	100	10,78 a 130					100			-A. 1				
R5	B7	ND		14 0 13					111	4.7				7	. 4			
R5	B8	ND		13 to 14	100	(41 J. 71)	VIII VII STAN	57.			18.55					<del></del>		<del></del>
R5	В9	ND	F7 5 7404		3 8 3 5	The first section			7		7 77	30			-			<del></del>
R5	B10	ND	1.74	W. 7.5	55 15 77	The 151.40	2003 ONE 188	17.39.34				1.1						<del> </del>
R5	C1	ND	1.45	vit sell.	3. 1575	7. (4.)		0.00		1 10	700.00					<del></del>	$\overline{}$	<del> </del>
R5	C2	ND	14	76.7 P.4	\$10 g/g/28			3777					·					<del></del>
R5	C3	ND		V 13 3	A/COUNTY	32 N. G. T.	-	77		F								
R5	C4	ND	7 7	13.7 ( ) ( )	1.48/180	18778 13	Profession							62.1				<del></del>
R5	C5	ND		7		1. 1. 1.				11.7			. A.			<del>                                     </del>		<del></del>
R5	C6	ND					7 W 7.3										···	
R5	C7	ND	5.00	133	100 100	4. A-1. A-	7 - 30 - 20 - 30	1 5 5 5 5	7	- 1 - 1	7 75					2		<del></del> -
R5	C8	ND	200	12:57:59	19 July 1	W13 / 12	2000 j. je 200 kg	100		, N. A.		7	100			_		<del></del>
R5	C9	ND	V 15 15	\$ 15 x 4"	75.50FE/Y	1.75% J. C. S.	医压缩性压缩	N 4 1.4	14 July 1		1.75 M							
R5	C10	ND		. 11.	yerri ili sa	978000	400	Court Mg.			1.4						-	
R5	D1	ND		10.00		\$20 G 18					7		1 - 11	7.80				-
R5	D2	ND		18 4 1	J. 1. 14. 1	411 53	144147111114							***************************************				
R5	D3	ND		15.5	57,	\$ 10 CO		1	44 (4.4)									
R5	D4	ND				3.11	50 948 8 5	15 19		T	100	A	7.74					
R5	D5	ND			1000	180	10 Petro 10 Tay 5	100				1000 000						
R5	D6	ND	12 12 7	75, 111, 111, 1	415.44	\$11.00	All James	11.0		7.5		A 1	7 10 7 1					
R5	D7	ND	1. 1. 1. 1. 1.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	13000		70, 111			A 1 1	307	100						
R5	D8	ND	17 1 17	41.77.75	7 S		ahata iliyeye k	14		3 a. 6								
R5	D9	ND	1 1	Kirkly.	Carry 1	artijas i		8-31-95		200		2						
R5	D10	ND				1977 J. K.A	and a start of a second	100			A. 1	100					[	
R5	E1	ND				5 3 W		v. 7 Yv.	245 W.S		5 5 7 5		<u> </u>					
R5	E2	ND	3 / 1977		4 5	\$2.76 P	4/2/2015/02	17 m 18			100							
R5	E3	ND			F 10 4-1	241, 247, 9	· 高文字(1953)	S. 10	\$3.56		9,7 4.77	9-2-5						
R5	E4	ND	2,360	10000		3 5754758.		Ayer in	3 1 1 1		3000.79	1. 14.5	53-17-	en e				
R5	E5	ND	200			10145	<u> </u>		2017	. :			W. (1)					
R5	E6	ND		9 10 10 10		<b>多个的角形</b>	27/3 G 180		. Januar		×	1000	1000					
R5	E7	ND			1000	2000	400 V.V.	14 7 5 8 6	98. S									
R5	E8	ND		200 P 100 P			<u> </u>	esta i e sy		2.55		3.332						
R5	E9	ND									2 3 55		·					
R5	E10	ND	4			2	1.17 (4.23.)			3.5	1.2	- 12						
R5	F1	ND	3.50					6. 1. 1.	L	ئىن.	41 5.1	ļ			ļ			
R5	F2	ND	ļ	<del> </del>		<b></b>		341	<u> </u>		100				ļ			
R5	F3	ND	400		1 1 1				<b></b>			ļ	ļ				igsquare	
R5	F4	ND				1 3/2 1/2 2				1 1 1								Ļ
R5	F5	ND			<del> </del>								<u> </u>	<u> </u>			<b></b> _	
R5	F6	ND	1.5		<del> </del>			1000		11.54		2 2 2 2					igsquare	
R5	F7	ND		H													<b> </b>	L
R5	F8	ND ND													ļ		لـــــــا	<u> </u>
	I	N/D		44.5						22.23				gert agreen grant in a Ter				
R5	F9			1	N 201 201	15,25,74				4.7								
R5 R5	F10	ND						Car 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	24 7	4.00	100 - 57	1.00			1.00			1
R5 R5 R5	F10 G1	ND ND				\$347.88	397.85.35.35.3			200	7 - 5 57 -			<del></del>			لـــــا	
R5 R5 R5 R5	F10 G1 G2	ND ND ND				1,026,032,4 107,032,0												
R5 R5 R5 R5 R5	F10 G1 G2 G3	ND ND ND ND																
R5 R5 R5 R5 R5 R5	F10 G1 G2 G3 G4	ND ND ND ND ND			2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3													
R5 R5 R5 R5 R5 R5 R5	F10 G1 G2 G3 G4 G5	ND ND ND ND ND ND																
R5 R5 R5 R5 R5 R5	F10 G1 G2 G3 G4	ND ND ND ND ND															48	

### LIBBY TEM Asbestos Structure Count

0412-003\_BA-00037\_271300244-0009\_TEM-ISO\_AR\_06-25-13\_I\_NotQC\_C0.xism

			ERROR CHECK
EPA SAMPLE ID: BA-00037	Matrix Air	Prep Indirect	
LAB SAMPLE ID: 271300244-0009	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith) B. Gallagher	QA by (e.g., M. Smith) M. Smollock
Data Entry date 6/26/2013	QA date 7/1/2013
Target Sensitivity Reached-Complete current GO, then stop.	

					mien orep	•												
Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM			Comments				Counted (e)
R5	G8	ND				1	19.					T						
R5	G9	ND	100		13.0		1 Jan 19 1 1 1	3.4				1.12				-		
R5	G10	ND		W. 5.4.7	1.0	1. 1.1.	A	4-100		7.7				***************************************			-	
R5	H1	ND			1 2 2 2 7	24 St #15	47 1 1 1 1 47			1000					· · · ·			
R5	H2	ND				4.5 5		1777		3.7	F		<u> </u>					
R5	Н3	. ND		27			45 3 4 15 4 A					· · · · · · · · · · · · · · · · · · ·						
R5	H4	ДN																
R5	H5	ND	5. S. S.		5,74,7		1.00											
R5	H6	ND		100			5.00		7			7						
R5	H7	ND		No. 1	1													
R5	H8	ND			10 m		12.11				97 F			<u> </u>				
R5	H9	ND			100			1										
R5	H10	ND										· · · · · ·						

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00038	PARAMETERS	
Tag	AL1	Effective filter area	360.0 mm2
Status	ANALYZED	F factor	2.50E-01
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	320
Lab Sample Number	271300244-0010	Number of Grid Openings (chrysotile)	320
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	890 L
Prep	Indirect	Sensitivity (amphibole)	3.89E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.89E-04 s/cc
Est. Particulate Loading	6%	Area Examined (amphibole)	4.160 mm2
		Area Examined (chrysotile)	4.160 mm2

I	Magnification:	LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

	o control (based on countable chactares only)											
Bin	LA	OA	CH	All Asbestos								
Total												
PCME	0	0	0	0								

# CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

ΕH	F	NΔ	ME.	

Laboratory ID:

Instrument ID

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

Category

Filter Status

Primary filter area (mm²)

Secondary Filter Area (mm²)

(do not include X) Grid opening area (mm²) EMSL27

Field

ANALYZED

4,800

0412-003\_BA-00038\_271300244-0010\_TEM-ISO\_AR\_06-24-13\_I\_NotQC\_C0.xlsm

FILE TYPE: Original

# Stopping Rules:

Recording Rules:			Rules:	Stopping Rules:		
	3:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity	
5.00		0	Minimum Length (um)		GOs required to	

Minimum Width (um)

312	GOs required to reach target
10.000	Maximum Area Examined (mm²)
770	GOs required to reach max area

# F-factor Calculation:

0.25

#### Maximum # of 25 Structures Estimated # of GOs 312 required

Ind	rect	Pre	aut c	uts		
		ÌF	ractic	n c	f nri	m

0.5	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
100	First resuspension volume or rinsate volume (mL)
50	Volume applied to secondary filter (mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL)
Volume applied to secondary filter (mL) or used for seri- dilution
Third resuspension volume (mL)
Volume applied to secondary filter (mL) or used for seri

### Input for Ashing of Secondary Filter

- 1	Fraction o	f secondary	filter	used	for	ashino
		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		4004		asimig

and the state of the state of	
0,25	F-factor

Grid opening traverse direction:	٧

### Supplemental Air Analysis

		lemental	

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample BA-00038 Tag AL1 Number: OL 100 CX II (27-2) Matrix Аіг Air volume (L), dust sample area (cm²), or 100 890 dustfall container area (cm2): LOW Date received by lab 5/21/2013 0.0130 Lab Job Number: 271300244 Lab Sample Number: 1.000 271300244-0010 1.000 Number of grids prepared 10 385.0 Prepared by (e.g., M. Smith) . Wyatt-Pescador 360.0 Preparation date 4/15/2009 EPA COC Number 0412-003

Estimated Particulate Loading (%)

LIBBY

TEM Asbestos Structure Count

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador		
Analysis date	6/24/2013		
Prep	Indirect 🔻		
If sample type = air, is there loose material or debris in the cowl?	No 🔻		
Analysis Method	TEM-ISO		
Analysis Method SOP	ISO 10312		
Grid storage location	2713-LIB-56		
Archive filter(s) storage location	ESAT Archive		
Enter the appropriate data in the calculate the F-factor			
F- factor	0.25		
Lab QC Type	NOT QC		

5

			ERROR CHECK
EPA SAMPLE ID: BA-00038	Matrix Air	Prep Indirect	
LAB SAMPLE ID: 271300244-0010	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO, then stop. QA by (e.g., M. Smith) M. Smollock
QA date 7/1/2013

Target S				urrent GO,				,						Para				
Grid	Grid	Structure		tructures		sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	≖ no	CH Not
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
S2	A1	ND																
\$2	A2	ND		<u> </u>														
S2	A3	ND												and the second second second				
<b>\$2</b>	A4	ND		100	5 4 5	4 4 7 5 5 5								n was a line of the state of th			T	
\$2	A5	ND	14. 3. 1.1			7				7, T								
S2	A6	ND			7.1		e systems			g 15 c				1.7.			<del></del>	
S2	A7	ND		1. 1. 1.6				1.11.								<del> </del>		
S2	A8	ND			7											<del> </del>	<del> </del>	
S2	A9	ND		<del> </del>														
62	A10																	
S2		ND																
S2	B1	ND				1,52,53					1.17							
S2	B2	ND		2000													<u> </u>	
S2	B3	ND																
S2	B4	ND	1.0	1.00	1. A. 1. 1. X			J. F. 1994	200				1-10	8	-			
S2_	B5	ND		5. 4.25.55		4 (4.5)	8.3% 1.45			2			7					
S2	B6	ND	1 4 T 3		4 A			7. 7. 1.	200							ļ		
S2	B7	ND	7. T.								7						<del> </del>	
S2	B8	ND	7											· · · · · · · · · · · · · · · · · · ·			<del>                                     </del>	r
\$2	B9	ND			1. No. of N.													
\$2	B10	ND								-			-			ļ		
S2	C1								<u> </u>	- 77		-						<del> </del>
52		ND ND		-		<del>                                     </del>	73.77		<del>                                     </del>	<b></b>			ļ		<b></b>		ļ	$\vdash$
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S2	C3	ND.		*	- No. 10 1	ny jedynaky	9450, 5 1745	S-90 8			1	4 . 50.0			<u> </u>		<b></b>	igspace
S2	C4	ND.		ļ	<u> </u>	2112		98.75				8	12					oxdot
S2	C5	ND						3.1			: 1							
S2	C6	ND		1 1		1 2					22 S							
S2	C7	ND								100								
S2	C8	ND	100		A 100					200	N					1	T	
S2	C9	ND				1.0		A 10 10 1		8 g 3	17.72	1				l	<b>!</b>	
S2	C10	ND				12.5	3.4	77.5										
\$2	D1	ND	<del></del>	7	7.	7			<b> </b>					<del></del>	ļ	<del>                                     </del>	<del> </del>	<del></del>
S2	D2	ND				<del></del>	· · · · · · · · · · · · · · · · · · ·					<del> </del>					-	<del></del>
S2	D3	ND															<del> </del>	<b></b>
S2	D3	ND					<del></del>	-	<b></b>					·····			<b> </b> -	<b>—</b>
02					<u> </u>									<u> </u>		ļ		<b></b>
S2	D5	ND		·														<b></b>
S2	D6	ND				Tables of the				4	1 1			10.70		·		
S2	D7	ND				4 4 4												
S2	D8	ND							N. 25 .		100							<u> </u>
S2	D9	ND			200	and the second		2.27	3000	1.5	1970							
S2	D10	ND		1.0				5.4										
S2	E1	ND			437 - 4			10.72			1 - 2-5							
S2	E2	ND			4	4.77 (5.87)		1 1/1 2	1.11	4		200	100					
S2	E3	ND	3 4 7 7	1000	1. 1. 1/1.			7 7 7	. 21.7	10.00				4.				
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S2	E7	ND					9	7.7	3 1970					···				$\vdash$
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S2	E9	ND			<del></del>					-		ļ						<del> </del>
S2	E10	ND			77.							-						$\vdash$
S2	F1	ND				***												
S2	F2	ND																L
S2	F3	ND								1.1								
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<u>S2</u>	F6	ND									1.0							
S2	F7	ND				<u> </u>			1.0									
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S2	F10	D N						. 17.5		1.00		[ ·						
S2	G1	ND											,			l		
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S2	G7	ND								-		<del></del>						
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S2	G10	ND	88 S. C. 45		<u> </u>					125	<u> </u>	10000						
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S2	13	ND		<b></b>	<del>                                     </del>		3,,		<del></del>				<b></b>				F0	<del></del>
			10 TC:	N A D . C . C	42.1.1	0.05	5474		L		· · · · · ·	L			للسلط		52	
U412-U03_	BA-00038_27	1300244-00	IO_IEM-ISC	J_AK_06-24	-13_I_NotQ:	∪_U0.xlsm;	DATA ENTRY	2									Daga 1	

			ERROR CHECK
EPA SAMPLE ID: BA-00038	Matrix Air	Prep Indirect	
LAB SAMPLE ID: 271300244-0010	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO, then stop. QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

	Grid	Reached-C Structure	omplete c	urrent GO,	then stop	ions (a)							Г					
Grid	Opening	Type	Primary	tructures Total	Length	Width	identification	LA	Mineral C	CH	NAM	Minerat	EDXA	Comments	1 = ye	s, blank	≃ no	CH Not Counted (e)
S2	14	ND			congai	771001	. :	- 50	l On	000	INCHA	Desc (c)	Obs (a)	Comments	OKEICH	Filoto	LD3	Counted (e)
S2	15	ND								<del> </del>					<del> </del>			
S2	16	ND						2 7 7									<b></b>	
S2	17	ND	7 155															
S2	18	ND			2 - S	2007/10/20	1.000											
S2	19	ND						1										
S2	110	ND			<u> </u>										ļ			
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S2	J3	ND	N						<b></b>						<del> </del>	ļ		
S2	J4	ND								-					<del> </del>		_	
S2	J5	ND					44 46	77 11 1							<del> </del>			
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S2	J7	ND	1 1 1					57	100	7.	A. 11 M. A.		14					
_S2	J8	ND	- 15			7 1.775	to A switch	4 . 4 0										
S2	J9	ND		97 - S	200	A . A .									<u> </u>			
S2 S4	J10 A1	ND ND														ļ		
S4	A1 A2	ND ND										<b> </b> -				ļ	ļ	
S4	A3	ND			15.47				4. C	-				***************************************	-			
S4	A4	ND									1 1		- 4		<del> </del>	<del> </del>		
S4	A5	ND							7						l			
_S4	A6	ND				18	e de								1			
S4	A7	ND			and the s	1			7.5	77 . S								
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S4 S4	A10	ND ND		14/2			12 11 14 (14 (14 (14 (14 (14 (14 (14 (14 (		1.478	130 V	1000	<b></b>	2 3 4 T 24					
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S4	B5	ND					37.77		12.5	1 1	15.5				<del>                                     </del>	-		
S4	B6	ND		N., 842	1.50 19	15.47.42	73.14.3.3	100	7.034	11,177		1 13	1		1			
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S4	88	ND		2.5	(h. 1. 452)		Was Deliv		1	1.0								
S4	B9	ND				101 to 31 or 4	100	elas (zi							<u> </u>			
S4	B10	ND		100	A 1 11 A		4.8		4	_					ļ			
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S4	C3	ND ND				-71		14 T		-	1 1 V				<del> </del>	<del> </del>		
S4	C4	ND	7		73.5	1			17.15							<del></del>		
S4	C5	ND.		21 TO 122	71 A.B.	The contract of	\$ 100 plants	-47		7	7. 18				<del>                                     </del>	-		
S4	C6	ND	200	30 At 15	Y 18	grander				45.8	15.3 %	- 17° -		化成化 美国人 网络哈克斯				
S4	C7	ND		Yr Diem			0.50, 3,5,500	5.54			1718	10.00						
S4	C8	ND									10.47	Say 1 1 1						
S4	C9	ND							<u> </u>									
S4 S4	C10 D1	ND ND	50.000												ļ	ļ		
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S4	D3	ND	5 1 1 1 1 1 1					7 - V		-					<del> </del>	<del>                                     </del>		
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S4	D5	ND			All the real	100	45.7	187 17 3 3					1 1					
S4	D6	ND						120		27.7								
S4	D7	ND										1			1 7			
S4	D8	ND ND			<b></b>						12.7					<u> </u>		
S4 S4	D9 D10	ND ND		-	-	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			77	7.50		<b></b>			<del> </del>	<u> </u>	<u> </u>	
S4	E1	ND					37 p. Sar (1973)		<del> </del>		127		<del></del>		ļ			
S4	E2	ND	3 4 THE		0.7763	\$ 1 B	25/41/2/20	9.5755	18 18 1		1.05.		11.2		<del> </del>	<del>                                     </del>		
S4	E3	ND	25.0	35 2 5 a j s		2014/11/07	25 A S. V.				- 1,144		1.00			<del>                                     </del>		
Ş4	E4	ND		1881	ger englis	Vales.	y say in the	45.55			9 19 20		.4 .5					
\$4	E5	ND				2.557.37				778	Q. 15. "							
S4	E6	ND	2 2 34	S-47 5		2011		13. 14. 72					- 7			L		
S4	E7	ND						1070	500			<b> </b>	<u> </u>		ļ			
S4 S4	E8 E9	ND ND		91 1 5 50	(CH 1) / 3	(1 + )/4					100		3			ļ		
S4	E10	ND							-	17.00			-		<del> </del> -			
S4	F1	ND			7 Sec. 10					7.1.1		<b></b>			<del>                                     </del>	<del> </del>		
S4	F2	ND						7.1	<b></b>		<b>.</b>		-		H	<del> </del>	ļ	
S4	F3	ND								given i				· · · · · · · · · · · · · · · · · · ·	<b> </b>	<b></b>	-	
S4	F4	ND			1911			7					1.00					
S4	F5	ND		14.5		- 7					11.							
S4	F6	ND						100										
S4	F7	ND		24 - 4 - 25	garan in la ba	***	LINATE OF STATE			1g - 156			7	V		ļ		
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S4 S4	F10	ND ND									1.1.634	3000	1. 25%		-		<del> </del>	
S4	G1	ND	7									<b></b>			<del> </del>	-		
S4	G2	ND		R 2 - 1	12.110	<u> </u>		100				· · · · · ·				<del>                                     </del>		
S4	G3	ND	Contract of		27.0	3.477.3	4.1				4			ere in the second of the	1			
S4	G4	ND				3.1797	2838 2007	August		16977								
<u>\$4</u>	G5	ND				100		Gran, en			200							
S4	G6	ND		L		12.112	DATA ENTRY	e a 3				12					53	
							DATA CHIDAY											

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EPA SAMPLE ID:	BA-00038
LAB SAMPLE ID:	271300244-0010

Air TEM-ISO Matrix Analysis Method

ERROR CHECK Prep Indirect
QC Type NotQC OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date 6/26/2013 QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013

Cond	Grid	Structure	No. of S	urrent GO, Structures		ions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ve	s, blank	= no	CH Not
Grid	Opening	Туре	Primary		Length		Identification	LA	OA	СН	NAM	Dasc (c)	Ope (d)	Comments	Sketch	Photo	FDS	CH Not Counted (
S4	G7	ND		<u> </u>					<u> </u>	<del>                                     </del>	V/ 1/81	2230 (U)	Ans (a)					Counted
S4	G8	ND	7	-		4, 11									-			
S4	G9	ND		<del> </del>	<del></del>					-	ļ				<del> </del>			
										-								
S4	G10	ND		1				* *						and the second second		1		L
S4	H1	ND			20 20 20 20	1 8 18 2 18	The March 1945	- T						A STATE OF THE STA	·	L		
S4	H2	ND	1.5		1.14	17 3 3 3		1 77 77					7	1				
S4	НЗ	ND		3 744	7 77				1									
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S4	H5	ND		1 7 7 7	1 1 1 1 1 1 1								-					
54	H6	ND	<del> </del>	100						-								
<u>S4</u>	H7	ND			<u> </u>													
54	H8	ND						11			2				ă.			
S4	H9	ND	7 12 19 S		1000								1 1 1					
S4_	H10	ND		X 30 11 11 11		5.525	A ST ST				1 1 7		110					
S4	11	ND	1.40	World N.	1 1 14	80,434	Mark Carlo	St. 120	A 100 11		8	17.11			· · · · · · · · · · · · · · · · · · ·			
\$4	12	ND		4 1. 56.7	70	4514154	Washington and		25.7		3.479							
S4	13	ND	7 7 7	36	1000	W 13 132												<b></b>
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S4	16	ND	75					1777										
S4	17	ND	37.7	12 Table 14		A 18 A 18		11/1/24	100	2 3					T			
S4	18	ND	7 7 5 7 8	2- A-2	100		TAY ARA	x 11177			100				1			$\overline{}$
S4	19	ND	75.00		3735.00		Jan. 11 240a		<b> </b>	11.00	783.4		****		-	<del></del>		
S4	110	ND	100	1	100							<b></b>			<del> </del>	<del></del>	<b> </b>	<del></del>
			-	Harris Contract	7 17 2 7					-	<b> </b>					ļ		
S4	J1	ND				1.7 (1.9)	× 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10	1 2 2			12 S			ļ			<u> </u>
S4	J2	ND			\$6 77 THE	3	Z 152 12 14											
S4	J3	ND				n - 1 1												
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S4	J5	ND	1 1 1				a j			1 -			Spring.					
S4	J6	ND	100	-				7		<del></del>	-	7.5						
\$4 \$4	J7	ND		24.7	-			1. 7.50	-	-	1	-					<u> </u>	<b></b>
	1 1/		<del>                                     </del>	<del> </del>					-	$\vdash$			F. 1.4 1			<u> </u>	<u> </u>	<u> </u>
S4	J8	ND					21 st. 1 st. 1 st.			200		5.50	15			1		
S4	J9	ND		1 1 1 m m		3 To 1 House	1.00	25 15 2	100	1.1	1.1	11 11						
S4	J10	ND	1 150	100		49	4.7	127	87.5									
S6	A1	ND	1 7		5.35	1.0	5 10 10 10 10	1.67				7.77				1.1		
S6	A2	ND			1.50		1 1 1 1 1 1 1 1			34.4					-			
S6	A3	ND		10000000	25.1	A			70.0	-		200	3.36					
S6				7			1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -					87 84.						
	A4	ND										Array Sales Age						
S6	A5	ND				Sec. 31 (4)		977	34 (1) 3			11 11 11					-	
S6	A6	ND	100		6-17-79-98	A CONTRACT		\$ 10 miles		4.1	175.1	07.55						
S6	A7	ND	1/10/2	10 10 10	100			A	37 - 33	400								
S6	A8	ND				1.11	100	1.7										
S6	A9	ND								<u> </u>						***********		
S6	A10	ND			-													
				<del>                                     </del>										<del></del>				
S6	B1	ND					4		100	8 ,5 2				<u> </u>				
S6_	B2	ND			2 / 3 / 3	4.34		Ship of the	1 1 1/2	200			4/3/11/2			- 1	6.00	ĺ
_ S6	B3	ND		\$50 No. 1776	A 50 17			25/4/11	100	S. 40		100						
S6	84	ND	Walter State	100	9 5 7 74	100		44,434				7						
S6	B5	ND		1.3 4 1.5 2.5	100	75	8 1 Sec. 150							The state of the s				
S6	B6	ND		10 Tu 10 July			<del>** </del>		-	1.					<del> </del>			
S6	B7	ND													ļ			<b></b>
				1000		154						2.4						ļ
S6	88	ND		-		1277 B							7.55					
S6	89	ND				1	1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A 1 A	40.00	1			543						
S6	B10	ND			145 A 155			100		L	18 18 1			and the second second				
S6	C1	ND		20	. i sa s t	3.5	1. 147 A. C.	1. 1.1.11		77. 1 1.	\$ 2.5				-			
S6	C2	ND	1 July 14	PV 92 / S	-8.79 ×	4487 Liter		45 T 1		2.5	1 1							
S6	C3	ND	7 7 3 4 7 3				A POST	100		-		9 1 1	7	······································	<del> </del>			
S6	C4	ND	<del></del>	1.0	<del>                                     </del>			1000				1000			<del> </del>			
S6	C5	ND ND	<del></del>	<del> </del>		<b> </b>				<del> </del>					<del> </del>			
			<del> </del>	3 4	<del> </del>	1 3 4		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	<b></b>						1			<u> </u>
S6	C6	ND	1 1 1		2					15		1200	4 2 1 3					
S6	C7	ND	1.75	1 1				11.	100			and the F	12.					
S6	C8	ND	4 1 A	18.7 TH. W.	1 1 150	57-497		1.00			. 1994		100	Attended to the second				
S6	C9	ND	1700 160	44.506		(6. ) 75		91. YS. 7	1.0	3	F 350	A Comment	14.5 p					
S6	C10	ND	100	54.945.695	1.0997	g salasy:	a Yayara da	26.00		175	1.574	70, 70		Francisco de la Carta			-	
S6	D1	ND		F. W		44 (S) 1 (A)	70.7	100			9 31				1			
S6	D2	ND	100		. 101,737	<del>                                     </del>			100	<del></del>	<del>                                     </del>			<del></del>	<del> </del>	-, -		
			-		<del>                                     </del>			<del> </del>		-	<b></b>		-				<u> </u>	<u> </u>
<u>\$6</u>	D3	ND	100 m	<del> </del>	-	<b></b>					ļ							
<u>\$6</u>	D4	ND					110 1 10				L			· · · · · · · · · · · · · · · · · · ·				
S6	D5	ND ND		4,140/01				15 32 2					<u> </u>					
S6	D6	ND			4 - 15 - 15 -	1 3,50					1 3 1							
S6	D7	ND		A. 7		Z = 139	A 1 4 1 14	7 - 1			14 14							
S6	D8	ND		F 25 12 13	1414 1 1414	7.00	248 5175 2	1.50	.: 7			+ 1 T		-		-		
S6	D9	ND	<del>                                     </del>	100		10 (3.45)	<u> </u>		<del> </del>	*		<del></del>		<del>-                                    </del>	-			
			<del> </del>		<del></del>			<del>- `</del>	<del>                                     </del>	<del></del>	$\vdash$							
S6	D10	ND ND	<del> </del>	-			<b></b>	<del></del>				<u> </u>	1.1		<u> </u>	· ·		
S6	E1	ND	3.5 2						<u> </u>	- 7	L	<u> </u>						
\$6	E2	ND					<u> </u>		-	4 1	$ldsymbol{ldsymbol{ldsymbol{eta}}}$							
S6	E3	ND																
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<u>\$6</u>	E7	ND	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Month Charle	1,500,130	\$ 15 E		90175 A							
S6	E8	ND		15 15 15 2				1.5 (1.5)	1.75% (2)	St 600				<u> </u>				
		ND	1	1 . 4 . 5 . 6 . 7		1.0	1.5	4			100				1		54	
S6	<u>E</u> 9						DATA ENTRY											

EPA SAMPLE ID: <u>BA-00038</u> LAB SAMPLE ID: <u>271300244-0010</u>	Matrix Air Analysis Method TEM-ISO	Prep Indirect QC Type NotQC	ERROR CHECK  OK - No errors found
(e.g., M. Smith) B. Gallagher	QA by (e.g., M. Smith) M. Smollock		

Data Entry by (e.g., M. Smith) B. Gallagher
Data Entry date 6/26/2013 QA date 7/1/2013 Target Sensitivity Reached-Complete current GO, then stop. 1 = yes, blank = no
Sketch | Photo | EDS Grid Structure No. of Structures Dimensions (a) Mineral Class (b) Mineral EDXA CH Not Grid Identification Primary Length Width OA CH NAM Comments Counted (e) S6 E10 ND S6 F1 ND \$6 F2 ND F3 <u>S6</u> ND S6 F4 ND F5 **S6** ND S6 F6 ND S6 F7 ND S6 F8 ND S6 F9 ND S6 F10 ND \$6 ND G1 S6 ND G2 S6 G3 ND S6 ND S6 ND <u>S6</u> G6 ND S6 G7 ND **\$6** G8 ND \$6 G9 ND S6 G10 ND S6 H1 ND S6 H2 ND S6 Н3 ND S6 H4 ND S6 H5 ND S6 ND Н6 **\$6** Н7 ND S6 Н8 ND S6 Н9 ND S6 H10 ND S6 11 ND S6 12 ND \$6 13 ND <u>S6</u> 14 ND <u>S6</u> 15 ND S6 16 ND S6 17 ND \$6 18 ND S6 ND 19 S6 110 ND S6 ND S6 ND J2 S6 ND J3 S6 J4 ND S6 ND S6 J6 ND \$6 ND S6 J8 ND S6 J9 ND S6 J10 ND S8 A1 ND S8 ND A2 S8 A3 ND S8 A4 ND S8 A5 ND S8 ND A6 S8 ND A7 S8 A8 ND S8 ND S8 A10 ND S8 B1 ND <u>S8</u> B2 ND \$8 В3 ND \$8 B4 ND S8 B5 ND S8 В6 ND S8 B7 ND S8 88 ND S8 В9 ND

# Version Air-DustEDD\_38g

### TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00047	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	65
Lab Sample Number	271300244-0011	Number of Grid Openings (chrysotile)	65
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	1154 L
Prep	Direct	Sensitivity (amphibole)	3.95E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.95E-04 s/cc
Est. Particulate Loading	5%	Area Examined (amphibole)	0.845 mm2
		Area Examined (chrysotile)	0.845 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)
Rules:	3:1	5	0.25

Stopping
Rules

Target Sens.	Max AE (mm²)	Max N LA
0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

i	Bin	LA	LA OA CH		All Asbestos	
	Total					
	PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00	

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

_	NIA	MAE	

0412-003\_BA-00047\_271300244-0011\_TEM-ISO\_AR\_06-24-13\_D\_NotQC\_C0.xlsm

FILE TYPE: Original

rding Rules:	Stopping Rules:				
Minimum Aspect Ratio	0.00040	Target Sensitivity			

# LIBBY **TEM Asbestos Structure Count**

Laboratory ID:			SL27	•	E
Instrument ID			OL 100 CX II (27-2		
Voltage (KV)			100	Air du	
Magnification (do not include X) 4,800			LOV	Ď	
Grid opening area (mm²)			0.013	Lá	
Scale: 1L =			1.00	La	
Scale: 1D =			1.00	N	
Primary filter area (mm²)			385.	Pı	
Secondary Filter Area (mm²)			360.0		Pr
Category			Field	•	EF
Filter Status			ANALYZED 🔻		

EPA Sample Number:	BA-00047	Tag	AL1	•
Matrix	Air	•		
Air volume (L), du dustfall container	1154			
Date received	by lab		5/21/20	13
Lab Job Numi	Lab Job Number:			
Lab Sample N	271300244-001			
Number of grid	ds prepared		10	
Prepared by (	e.g., M. Smith)		D. Barr	еу
Preparation date			4/15/2009	
EPA COC Number			0412-0	03
Estimated Particulate Loading (%)			5%	

Analyzed by (e.g., M. Smith)		E. Wyatt-Pescado		
Analysis date		6/24/2013		
Prep Direct			•	
If sample type = air, is there loose material or debris in the cowl?	ŀ	<b>No</b>	•	
Analysis Method	1	TEM-ISO	-	
Analysis Method SOP		ISO 10312		
Grid storage location		2713-LIB-57		
Archive filter(s) storage location		ESAT Archive		
F- factor		1		
Lab QC Type	NO	T QC	•	

5.00	Minimum Length (um)	65	GOs required to reach target
0.25 Minimum Width (um)		10.000	Maximum Area Examined (mm²)
	•	770	GOs required to reach max area
F-factor Calculation:		25	Maximum # of Structures
Indirect P	rep Inputs	65	Estimated # of GO required
	Fraction of primary filter [For dust and dustfall, e.	nter 1.0]	
	First resuspension volur	ne or rinsate	volume (mL)

### Inputs for Serial Dilutions

Recording Rules:

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Volume applied to secondary filter (mL) or used for serial

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for senal dilution

∖iso	ana	lyzed	on	7/	1/2013.	

Input for Ashing of Secondary Filter
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Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	V
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### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

			ERROR CHECK
EPA SAMPLE ID: BA-00047	Matrix Air	Prep Direct	
LAB SAMPLE ID: 271300244-0011	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date 6/25/2013

A Data Entry date 6/25/2013

A Data Entry date 6/25/2013

A Data Entry date 6/25/2013

Grid	Grid	reaction-C	OIIIDIBLE C	urrent GO,														
Grid		ity Reached-Complete curr			Dimens				Mineral EDXA Desc (c) Obs (d) Comments			1 = yes, blank = no		T CHINA				
	Opening	Туре	Primary	Total	Length	Width	Identification	IA.	OA	CH	NAM	Mineral	EDXA	Commonte	Sketch	S, Diank	EDS	CH Not
A1	A2	ND	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		Longin	77,001	No. 10			0,1	14/2/4	L Desc (c)	ODS (d)	Comments	OKOLOH	1 11010	1 200	Counted (e)
A1	A4	ND					7 7 7									<del></del>		
A1.	A6	ND	-	111				1,5545									<del> </del>	
A1	A8	ND				8. 1. 1. 17.	ar V parang		-		100				·			
A1	A10	ND					35 30 45		33.7	100		<del> </del>					<del></del>	
A1	B1	ND			17				2 40	. 9.77							<del></del>	
A1	В3	ND							4,515			7.7	17					<del></del>
A1	B5	ND				100			77.75									
A1	B7	ND				8 1 13		1 1 7							i			
A1	B9	ND					7.	1,11							-			
A1	C2	ND							7.5									
A1	C4	ND					7											
A1	C6	ND													1			
A1	C8	ND																
A1	C10	ND							1									
A1	D1	ND				- 2									l			
A1.	D3	ND																
A1	D5	ND						- 77			7				T			
A1	D7	ND			5.34	100	4.5 4.5								i i		· · · · · ·	
A1	D9	ND		100				17. E							1		-	
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A1	E10	ND		- 5					ARTH A	37.7				A Section				
A1	F1	ND				44		- 1 1/	14.7		1 1							
A1	F3	ND				. 1.5			10.00						1.			
A1	F5	ND																
A1	F7	ND																
_A1	F9	ND				14		2.5				5 5 7						
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A3	D3	ND																
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A3	E4	ND				1,100			N. 1384	2.25	11/11/	1.0	12 1		1			
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_A3	E8	ND					20 2 2 2 2 2				4							
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A3	F7	ND			1.0										ļ			
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A3	G2	ND		<u></u>		<b></b>			·	<u> </u>	ļ	<u> </u>			<u> </u>			
A3	G4	ND					L		<u> </u>	<u> </u>					<b></b>			
A3	G6	ND			ļ				خستنيا	<u> </u>		ļ			ļ			Ļ
A3	G8	ND							100		ļ.,	[	L	<del></del>	<del>                                     </del>			
A3	G10	ND		ļ				1 1 1 1 1	<u> </u>	347.5					ļ			ļ
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A3	H5	ND 1						100	<b></b>						1 2 2		<u></u>	-
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A3	H9	ND				- 22		11.7	<b></b>		200				ļ			<b></b>
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A5	D6	ND						<u> </u>	,									
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A5	D10	ND		L	L			L	1. 2.1		<u> </u>	L		<u></u>	<u> L. 11.</u>		L	<u> </u>

# TEM Asbestos Structure Count -- ISO 10312

<b>EPA Sample Number</b>	BA-00048	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	65
Lab Sample Number	271300244-0012	Number of Grid Openings (chrysotile)	65
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	1165 L
Prep	Direct	Sensitivity (amphibole)	3.91E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.91E-04 s/cc
Est. Particulate Loading	6%	Area Examined (amphibole)	0.845 mm2
	_	Area Examined (chrysotile)	0.845 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				the second secon
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

FΙΙ	F	NΔ	ME	

Laboratory ID:

Instrument ID

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

(do not include X)

Grid opening area (mm²)

Primary filter area (mm²)

Secondary Filter Area (mm²)

EMSL27

4.800

100

LOW

0.0130

1.000

1.000

385.0

360.0

Field

ANALYZED

0412-003 BA-00048 271300244-0012 TEM-ISO AR 06-24-13 D NotQC C0.xlsm

FILE TYPE: Original

### Recording Rules:

3:1

5.00

0.25

### Stopping Rules:

otopping ite	
0.00040	Target Sensitivity
64	GOs required to reach target
10.000	Maximum Area Examined (mm²)
770	GOs required to reach max area

### F-factor Calculation:

▼ Minimum Aspect Ratio

Minimum Length (um)

Minimum Width (um)

#### Maximum # of 25 Structures Estimated # of GOs required

### Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

### **Inputs for Serial Dilutions**

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Input for Ashing of Secondary Filter

F-factor
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Grid opening traverse direction:	
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### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

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Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

### EPA Sample BA-00048 AL1 Tag Number: OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or 1165 dustfall container area (cm²): Date received by lab 5/21/2013 Lab Job Number: 271300244 Lab Sample Number: 271300244-0012 Number of grids prepared 10 Prepared by (e.g., M. Smith) D. Bamey Preparation date 4/15/2009 EPA COC Number 0412-003

6%

LIBBY

**TEM Asbestos Structure Count** 

Analyzed by (e.g., M. Smith)	E. Wyatt-Pesca	dor
Analysis date	6/24/2013	
Prep	Direct	•
If sample type = air, is there loose material or debris in the cowl?	No 🔽	•
Analysis Method	TEM-ISO	
Analysis Method SOP	ISO 10312	<u>.</u>
Grid storage location	2713-LIB-57	
Archive filter(s) storage location	ESAT Archive	•
F- factor		
Lab QC Type	NOT QC	

### COMMENTS

Category

Fitter Status

Also analyzed on 7/1/2013.

Estimated Particulate Loading (%)

			ERROR CHECK
EPA SAMPLE ID: <u>BA-00048</u> LAB SAMPLE ID: <u>271300244-0012</u>	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	OK - No errors found
Data Entry by (e.g., M. Smith) B. Gallagher	QA by (e.g., M. Smith) M. Smollock		

	Data	Entry date	6/25/2013			<b>(</b>	QA date	7/2/2013	3			1						
arget 9	Sensitivity (	Reached-C	omplete c	urrent GO,	then stop	),												
Grid	Grid	Structure		tructures	Dimens	sions (a)	Identification		Mineral C		· ·	Mineral	EDXA		1 = ye	s, blank	= no	CH Not
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e
C1	A2	ND ND							5 1 11	200								
C1	A4	ND		<u> </u>	ļ			3.1	1,25	2, 2, 1								
C1_	A6	ND								1.	47.8							
C1_	A8	ND									1.7							
C1	A10	ND		3			200 200		1.25		100							
C1_	B1	ND		21 198		1.5		200	1.7	7.55								
C1	B3	ND		30.00				H. 1944				7			T			
_C1	B5	ND				1 2 2	a fally fair	150, 8			40.00	4 , 4 ,					-	
C1	B7	ND						45 5 5	1. 11.									
C1	B9	ND					100	1 1 1 1 1								77		
C1	D2	ND			100		1 1 1.7								<del>                                     </del>			
C1	D4	ND				1.4		19 1 1										
C1	D6	ND		10 9											<del>                                     </del>			
, Ç1	D8	ND	2 1/4			7		7		7		<del> </del>			<del> </del>		<del></del>	
C1	D10	ND		7.54			7								<del> </del>			
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C1	F2	, ND			<del>                                     </del>	<del> </del>		-	ļ			<del> </del>	ļ				ļ	<del> </del>
C1	F4	ND ND	-	<del></del>					<b> </b>		-	<del> </del>			ļ			——
C1	F6	ND	<b>—</b>				-	<b> </b>		-				<u> </u>	ļ	<del></del>		
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C1	F8	ND								1111		1875			1 2 2			
C1	F10	ND				4 1 27												
C1	G1	ND			7.7.7.	2.15				2.0								L
C1	G3	ND										200			1			
C1	G5	ND						1.5						Account to the second				
C1	G7	ND									1	40.0						
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Ç3	C1	ND			1,44	7 1 4		2 407	1 ×									
СЗ	Ç3	ND			1.55	7			27	14.	1. 7							
<u>C3</u>	C5	ND					5 4 6 6								1 1			
C3	C7	ND		1			1.54		3 - 7 - 77									
C3	C9	ND													$\vdash$	<b></b>		
C3	D2	ND		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		- 17.7										_		
СЗ	D4	ND				4.5		71 7.5	3 7 7							<del> </del>		
_C3	D6	ND					11 11 11 11	14, 117							<del> </del>		-	<b>-</b>
СЗ	D8	ND			1.11	100	15 15 15 15 15 15 15 15 15 15 15 15 15 1			393		7 4 4						
C3	D10	ND					100	37.4.3	100		A 4							
C3	F1	ND					* * * * * * * * * * * * * * * * * * * *	-7-		-					<del></del>	<del> </del>		
C3	F3	ND								-					<del> </del>		-	<del></del>
C3	F5	ND													<del> </del>			<del></del>
C3	F7	ND		<del></del>			100	<del> </del>		<del></del>		-	<b></b>	<del></del>	<del></del>			
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		ND ND			<del></del>	<u> </u>				<u> </u>	<b></b>			<u> </u>				
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C3	H7	ND		1.5		1000	2 1 35 July 14	41.74					- 1	<u> </u>				1
C3	H9	ND			1.50			S. 18 18 18	- 2011	91. E V	10.00		1 1 1		1			i
C3	J2	ND		400 000	1.0	ST RELEASE	# 1455 E S			40.00	100	9/2 pr 1 m						
C3	J4	ND				19.714		- 18 Y.	25, 41			150	47 T 15					
СЗ	J6	ND	100	W. 171	34.	4 11/2/27		100	14	107.00	345.00		e Service					
Ç3	J8	ND				N. 174 - 7		2,344.25								l		[
C3	J10	ND	1 1	11.7	100	20 30 4	39 E. W. S. V	17 6.5	3,20,000	0.783	1 3 7 2		73.00			·		
C5	G2	ND		-1		11 47 15				7						<del>   </del>		
· · ·		ND			7//	armail a										<u> </u>		
	l G4 I															L		1
C5	G4 G6				1000			7 1 1				4.						,
	G4 G6 G8	ND ND			777.1					1,0								

# Version Air-DustEDD\_36g

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00058	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	146
Lab Sample Number	271300244-0013	Number of Grid Openings (chrysotile)	146
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	510 L
Prep	Direct	Sensitivity (amphibole)	3.98E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.98E-04 s/cc
Est. Particulate Loading	3%	Area Examined (amphibole)	1.898 mm2
	<u></u>	Area Examined (chrysotile)	1.898 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

	NIA	ME.	

0412-003 BA-00058 271300244-0013 TEM-ISO AR 06-24-13 D NotQC C0.xlsm

LIBBY

**TEM Asbestos Structure Count** 

FILE TYPE: Original

# Recording Rules: 3:1

5.00

0.25

### Stonning Rules

	- Trainings	otopping ite	11001
•	Minimum Aspect Ratio	0.00040	Target Sensitivity
)	Minimum Length (um)	146	GOs required to reach target
5	Minimum Width (um)	10.000	Maximum Area Examined (mm²)
	-		GOs required to

### F-factor Calculation:

25 Structures Estimated # of GOs 146 required

reach max area

Maximum # of

**Indirect Prep Inputs** Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	v

### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: BA-00058 EMSL27 AL1 Tag Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 510 dustfall container area (cm²): Magnification 4.800 LOW Date received by lab 5/21/2013 (do not include X) Lab Job Number: Grid opening area (mm²) 0.0130 271300244 Scale: 1L = 1.000 Lab Sample Number: 271300244-0013 Scale: 1D = 1.000 Number of grids prepared 10 385.0 Prepared by (e.g., M. Smith) Primary filter area (mm²) D. Barnev Secondary Filter Area (mm2) 360.0 Preparation date 4/15/2009 Field EPA COC Number 0412-003 Filter Status ANALYZED Estimated Particulate Loading (%) 3%

Analyzed by (e.g., M. Smith) E. Wyatt-Pes		
Analysis date	6/24/2013	
Prep	Direct	
If sample type = air, is there loose material or debris in the cowl?	No 🔻	
Analysis Method	TEM-ISO	
Analysis Method SOP	ISO 10312	
Grid storage location	2713-LIB-57	
Archive filter(s) storage location	ESAT Archive	
F- factor		
Lab QC Type	NOT QC	

### COMMENTS

Category

Also analyzed on 7/1/2013.

Page 1 of 2

				ERROR CHECK
PA SAMPLE ID:		Matrix Air	Prep Direct	
_AB SAMPLE ID:	271300244-0013	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date
6/25/2013 QA by (e.g., M. Smith) M. Smollock QA date 7/2/2013 Target Sensitivity Reached-Complete current GO, then stop. Grid Structure No. of Structures Dimensions (a) Mineral Class (b) EDXA 1 = yes, blank = no Grid Identification Mineral CH Not Type Primary Width LA CH NAM Comments Sketch Photo EDS Desc (c Counted (e) E1 ND E1 A2 ND E1 A3 ND E1 A4 ND E1 A5 ND E1 A6 ND E1 Α7 ND E1 Α8 ND E1 Α9 ND E1 A10 ND E1 B1 ND E1 B2 ND E1 В3 ND E1 B4 ND E1 B5 ND E1 B6 ND E1 87 ND 88 ND E1 B9 ND 810 ND E1 C1 ND E1 C2 ND E1 C3 ND E1 C4 ND E1 C5 ND E1 C6 ND E1 ND E1 C8 ND E1 C9 ND E1 C10 ND E1 D1 ND E1 D2 ND E1 D3 ND E1 D4 ND E1 D5 ND E1 D6 ND E1 D7 ND E1 D8 ND E1 D9 ND E1 D10 ND E1 E1 ND E1 E2 ND E1 E3 ND E1 E4 ND E1 E5 ND E1 E6 ND E1 ND E1 E8 ND E1 E9 ND E1 E10 ND E1 F1 ND F2 ND E1 F3 ND E1 F4 ND F5 E1 ND E1 F6 ND E1 F7 ND Ę1 F8 ND E1 F9 ND E1 F10 ND E1 G1 ND E1 G2 ND E1 G3 ND E1 G4 ND G5 ND E1 G6 ND G7 ND E1 G8 ND E1 G9 ND E1 G10 ND E3 A1 ND ND E3 A2 E3 A3 ND E3 ND E3 ND E3 A6 ND E3 Α7 ND E3 A8 ND E3 A9 ND E3 A10 ND E3 В1 ND ND E3

В3

ND

		_				[	ERROR CHECK
	BA-00058	Matrix	Air	Prep	Direct	ſ	
LAB SAMPLE ID:	271300244-0013	Analysis Method	TEM-ISO	QC Type	NotQC	i	OK - No errors found
				•		-	

Data Entry by (e.g., M. Smith)

B. Gallagher

OA by (e.g., M. Smith)

QA by (e.g., M. Smith)

QA date

7/2/2013

Target S	Sensitivity	Reached-C	6/25/2013 omplete c	urrent GO,	then stop	).	QA date	7.2.72.0.T.C				J						
Grid	Grid Opening	Structure Type	No. of S Primary	tructures Total	Dimens Length	ions (a) Width	Identification	LA	Mineral C	lass (b)	NAM	Mineral	EDXA		1 = ye	s, blank	= no	CH Not
E3	B4	ND	, initially	10.0	Lengui	VVICIO	1.2.2	- 25	- OA	l Cn	INAM	Desc (c)	Ops (d)	Comments	Sketch	Photo	EDO	Counted (e)
E3	B5	ND					737 75 35 35			100	17 17		<del> </del>			-	-	
E3	B6	ND	1000			1 7		9.37	4 14.5			<del>                                     </del>						
E3	B7	ND							32. 32.			17						
E3	₿8	ND						1, 53			V							
E3	B9	ND					5.7	7 : 1	1 1 1 1		· · · · · ·	1	1					
E3	B10	ND		a 1 a			9.0	1 1 L	3.597	1.0								
E3	C1	ND						1 - W. L.	1 11			1 7 7						
E3	C2	ND						975		4								
E3	C3	ND				1 14 1 CALL	250 200				1 1	100	1 11					
E3	C4	ND ND																
E3 E3	C5 C6	ND ND										ļ				ļ		
E3	C7	ND		<del> </del>								<del> </del>						
E3	C8	ND			<del> </del>					-		<del> </del>						
E3	C9	ND	77.7				-											
E3	C10	ND			1.7						7 T	7			-			
E3	D1	ND	S 14 19	73.1 37.	4 9		1 1 1 1 1 1 1	4 1 1 7	1.44				7 7					
E3	D2	ND			178 1 2	186	77. 18. 1.46.	45, 145			75.0							
E3	. D3	ND									7 7	<del> </del>						
E3	D4	ND				45 T. T.	7.444	1.00			7		1 1	1				
E3	D5	ND		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	17.5	1.00					11.00	1						
_E3	D6	ND		10.75		A	5 7 70	100	. 1111			1.77						
E3	D7	ND			20.00	94,7		9			4							
E3	D8	ND	1 145	50.00		eritaring.	1,38	45.3	1,397.00		77.0							
E3	D9	ND.	1 3%			2 2 2 3		2	1	2 - 12								
E3	D10	ND	2								1	<u> </u>						
E3	E1	ND	·										2 1					
E3	E2	ND.		<u> </u>		-				<u> </u>		<u> </u>						
E3	E3	ND ND										ļ						
E3 E3	E4 E5	ND ND				25.7	800						7.5					
E3	E6	ND										<del></del>	- n					
E3	E7	ND		100		2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		7,7 41,7				1.00 May 1.25						
E3 -	E8	ND		<del>                                     </del>		100 m		257 117		-			-					
E3	E9	ND	. 97.5		10 TO	3 3 60			V 1 3	75.0		-	7.7					
E3	E10	ND		100		5 1 3		100			-							
E3	F1	ND		. P. J.		\$0.00	Sec. 15.8.1	7 O.	1000	1.15								
E3	F2	ND	1.1			Z110 W	No topo 4 no		1 1 1/4	(1) P	4	1. 1. 4			:			
E3	F3	ND		5	100	2007	2000 E 標準 多	7-55	S. 11 Y	4	40 2	8 1.7 2	777					
E3	F4	ND						8 1 -		A. 363	A	4 347		17				
E3	F5	ND						×	30.27	7.7	4							
E3	F6	ND		ļ			S - 25											
E3_	F7	ND												the same and the s				
E3	F8	ND						1000 1000	35 Ta (3.85)						<u> </u>		·	
E3	F9	ND		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	12.23	3 8 10 7 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		415 TV		2.4827	7			<b></b>			
E3 E3	F10 G1	ND ND	-		/ /				10 98 TO		17.34	<del> </del>			S. 10 1 E			
E3	G2	ND ND		38.5	100				1. 60/11 1 1. 60/11 1	7.0		-	1 4 4		-			
E3	G3	ND			200						100		<del>                                     </del>		<del> </del>			
E3	G4	ND				نشوسين						<del>                                     </del>			ļ		$\vdash$	
E3	G5	ND				<del></del>	13 Y 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		100	10.00	-	Sel.					-	
E3	G6	ND	111		100		777	1.5		30.5	Al Janes		<b> </b>	<del></del>	<b> </b>			
E3	G7	ND			5 FE.	44. 45.5	7 6 m 70%		77.5					5 - 53				
E3	G8	ND			10.1663	100			200	10.00					· ·			
E3	G9	ND					St. Line				1014	3	l		<del>                                     </del>			
E3	G10	ND							_^	20.00								
E5	B2	ND					4.3	4.4			1 43		L					
E5	B4	ND			2, 4		1 77 11		1									
E5	B6	ND							A									
E5	B8	ND						. 34.155		5.30	8 25		100					
E5	B10	ND		7.17			18				1,175	L		26.2				
E5	C1	ND		L		11.1%		No. 3.5		3	1000	1.0	1		l			

### TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00059	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	148
Lab Sample Number	271300244-0014	Number of Grid Openings (chrysotile)	148
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	501 L
Prep	Direct	Sensitivity (amphibole)	3.99E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.99E-04 s/cc
Est. Particulate Loading	2%	Area Examined (amphibole)	1.924 mm2
		Area Examined (chrysotile)	1.924 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)
Rules:	3:1	5	0.25

Stopping	
Rules	

Target Sens.	Max AE (mm²)	Max N LA
0.0004	10.000	25

COUNTS (based on countable structures only)

	a on ooanta	bic on actaics t	, i i i y j	
Bin	LA	OA	CH	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

F	NI	۱ ۸	iŒ.

0412-003 BA-00059 271300244-0014 TEM-ISO AR 06-24-13 D NotQC C0.xlsm

LIBBY

**TEM Asbestos Structure Count** 

FILE TYPE: Original

**Recording Rules:** 

Ctannian Bulanc

770

toles.	Stopping Ku	<u>ies.</u>
linimum Aspect Ratio	0.00040	Target Sensitivity
linimum Length (um)		GOs required to reach target
linimum Width (um)	1 10 000	Maximum Area Examined (mm²)

F-factor Calculation:

▾

5.00

0.25

reach max area Maximum # of 25 Structures Estimated # of GOs 148 required

GOs required to

**Indirect Prep Inputs** Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	V
----------------------------------	---

### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00059 AL1 Tag Number: Instrument ID OL 100 CX II (27-2) Matrix Air Air volume (L), dust sample area (cm²), or Voltage (KV) 100 501 dustfall container area (cm²): Magnification 4.800 LOW Date received by lab 5/21/2013 (do not include X) Lab Job Number: Grid opening area (mm²) 0.0130 271300244 Scale: 1L = 1.000 Lab Sample Number: 271300244-0014 Scale: 1D = 1.000 Number of grids prepared 10 385.0 Prepared by (e.g., M. Smith) Primary filter area (mm²) D. Bamev Secondary Filter Area (mm²) 360.0 Preparation date 4/15/2009 Category Field EPA COC Number 0412-003

ANALYZED

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador		
Analysis date	6/24/2013		
Prep	Direct	•	
If sample type = air, is there loose material or debris in the cowl?	No	•	
Analysis Method	TEM-ISO	•	
Analysis Method SOP	ISO 10312	•	
Grid storage location	2713-LIB-	57	
Archive filter(s) storage location	ESAT Arch	ive	
F- factor			
Lab QC Type	NOT QC	•	

## COMMENTS

Filter Status

	Also analyzed on 7/1/2013.
-	
i	
Ì	
ı	

2%

Estimated Particulate Loading (%)

,				ERROR CHECK
PA SAMPLE ID:	BA-00059	Matrix Air	Prep Direct	
LAB SAMPLE ID:	271300244-0014	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found
			,	

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete curre QA by (e.g., M. Smith) M. Smollock QA date 7/2/2013

	Grid	Structure	No. of S	urrent GO, Structures	Dimens	sions (a)			Mineral C	lass (b)		Mineral	EDXA		1 = ve	s, blank	= 70	00.00
Grid	Opening	Туре	Primary		Length	Width	Identification	LA	OA.	СН		Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)
G1	B1	ND				17.31.5		42° V 41.3°		10.7		· · · · · ·	0.00 (0/					Counted (e)
G1	B2	ND						¥ 4,14 °	1.96 3.65	5 17	454					7	-	
_G1	B3	ND										7.1						
G1	B4	ND				1 2.4					4		1					
G1	B5	ND								<u> </u>	Table 1							
G1	B6	ND																
G1	B7	ND											<u> </u>		ļ			
G1	B8	ND						3 m / 1 (s		2								<u> </u>
G1 G1	B9 B10	ND ND																
G1	C1	ND ND		ļ	<del> </del>				<del> </del>	·						ļ		<del></del>
G1	C2	ND		<del> </del>	····	<del> </del>	ļ	<b> </b>	ļ								ļ	
G1	C3	ND				<b></b>				ļ	<del> </del>	ļ						
G1	C4	ND		-					-		<del></del>		-		-			
G1	C5	ND				1,1	7. 4 7 7 14											
G1	C6	ND			100		No. 1 Caracter at	. 1017	77.	-	7.75		100				<del> </del>	
G1	C7	ND		100		3 74 %	2000		l —	1			-		<del>-</del>	<del></del>	<del> </del>	
G1	C8	ND					1.44	7 33 77		1								
_ G1	C9	ND					47 52 22	1 - 1 - 7	1.7						· · · · · ·			
G1	C10	ND											100				1	
G1	D1	ND				14.5	King period at 180	A 1	No. 1									
G1	D2	ND						. / Ye	F. 1. 6		187		17 -					
G1	D3	ND	ļ		<u> </u>	\$ 11.5%		100	27 Factor 1		17.7							
G1	D4	ND	3					1977	25.23		· . ·							
G1	D5	ND ND														<u> </u>		
G1	D6	ND ND	-	<b> </b>	1						-			<u> </u>		ļ	<u> </u>	
G1	D7	ND ND		-	<u> </u>			<u> </u>	ļ				ļ		-	<b> </b>		
G1 G1	D8 D9	ND ND		<b></b>	1	<del> </del>					-	ļ			ļ			
G1	D9	ND ND				-		<u> </u>	-	-	-	-				ļ		
G1	E1	ND	<b></b>	-	<del> </del>				<del>                                     </del>				<b></b>		ļ	<del>                                     </del>	-	
G1	E2	ND			<del></del>				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									
G1	E3	ND			7.7			7								ļ	-	
G1	E4	ND					-	7.7		<u> </u>					<del> </del>			
G1	E5	ND			-	1.50	5	700.7			7.5							
G1	E6	ND			100			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		7	. 91							
G1	E7	ND								5 3 -		7		2.4				
G1	E8	ND		3 3 3								1						
G1	E9	ND				1 1 1 1	A		11,1			, T						
G1	E10	ND		3 2						1								
G1	F1	ND										9						
G1	F2	ND			14													
G1	F3	ND	ļ							-	7.							
G1 G1	F4 F5	ND			-			-	24.5	<b></b>					ļ			
G1	F6	ND ND		-														
G1	F7	ND			-										<del> </del>			
G1	F8	ND					- <del> </del>		4 1 6									
G1	F9	ND		7		100			100		-							
G1	F10	ND					7				1	2.5						
G1	G1	ND					77.5			7.5	1.4	48.0			<del> </del>			
G1	G2	ND			31		315 B	74	100	2. 4		25 2000		7				
G1	G3	ND	1 1			Y 20 1	1 N	7			77 3		100			17		
G1	G4	ND							11.			2 1						
G1	G5	ND					20 S. 10 S.				1 1 1 7 7	6						
G1_	G6	ND	ļ	. A.														
G1	G7	ND		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1 1	<del>                                     </del>					<u> </u>							
G1	G8	ND	<del> </del>			<del>                                     </del>	ļ	<u></u>	ļ	-	$\vdash$	<u> </u>			<u> </u>	ļ <u>.</u>		
G1	G9	ND	ļ		<del>                                     </del>			<u> </u>			<u> </u>	<b></b>			<b> </b>	<u> </u>	ļ	
G1 G1	G10 H1	ND ND	<del></del>		<del> </del>	<del> </del>				-	<del></del>	<del></del>			<u> </u>	<del> </del>		
G1	H2	ND ND		· · · · ·	<del>                                     </del>	3 45 7 3			<del> </del>				-					
G1	H3	ND	<u> </u>	1.1.1.1						<del>                                     </del>		-	1,334.5		<b> </b>		<del></del>	
G1	H4	ND							<del> </del>	<b></b>	10.00		1000		<del>                                     </del>	<del></del>		
G1	H5	ND			1		14								l			
G1	H6	ND													·			
G1	H7	ND					<u> 1888 - 1</u>								l			
G1	Н8	ND						100			81							
G1	Н9	ND				11111	E				27							
G1	H10	ND			ļ		2.11	. 4 7 7										
G3	C1	ND				100							+ 2					
G3	C2	ND ND	ļ	<b> </b>				<u></u>	ļ	<u> </u>			1000		<u> </u>		<u> </u>	
G3	C3	ND ND	<b></b>		<u> </u>			100	ļ		36.	L	1			L		
G3	C4	ND	<del>                                     </del>	<u> </u>	<u> </u>			-	<b></b>	ļ		<b></b>		<u> </u>	<u> </u>	<b></b>	<b> </b>	
G3	C5	ND ND	<del> </del>	<del> </del>	<del> </del>				<del>                                     </del>	ļ		<b></b>			ļ	<u></u>		
G3 G3	C6 C7	ND ND		-			an karryl Krea Zel nivîgerayî	ļ		<b></b>		-			ļ	<u> </u>	<b> </b>	
G3	C8	ND ND	<del> </del>	<del>                                     </del>	7.	10, 100				14	<u> </u>	g	40.00				<b></b>	
G3	C9	ND ND	<del> </del>		-	2 1 4 7 5 2 1 1 1 1 1 1		100 mg		- 1					ļ <del> </del>		$\vdash$	
G3	C10	ND	1 7		<del> </del>	V 1975	3.00	1000 20 V			3 2 8 7	7			<del> </del>		$\vdash$	
G3	D1	ND				. 1		29	<b> </b>				<u> </u>		<del> </del>	<del></del>		-
G3	D2	ND			-	· · · · · · · ·								<del></del>	<del> </del>		$\vdash$	
G3	D3	ND		74.07			878 J. S								<b></b>		68	
					·		DATA FNTRY			<u></u>			<u></u>		<b></b>	L		

			ERROR CHECK
EPA SAMPLE ID: BA-00059	Matrix Air	Prep Direct	
LAB SAMPLE ID: 271300244-0014	Analysis Method TEM-ISO	QC Type NotQC	OK - No errors found

Data Entry by (e.g., M. Smith)

B. Gallagher

Data Entry date 6/26/2013

Target Sensitivity Reached-Complete current GO then stop

Target S	ensitivity	Reached-C	omplete c	urrent GO,	then stop	).	QA date					•						
Grid	Grid	Structure	No. of S	tructures	Dimen	sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
One	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch			Counted (e)
G3	D4	ND			7										1	Ī		
G3	D5	ND			200						7					$\overline{}$		
G3	D6	ND						10 11	1							†		
G3	D7	ND					8 (A) (A)		1.75	- 1								
G3	D8	ND		1	3.0		Section 1995		2 1							T		
G3	D9	ND					200	7.52.2%	1.5 %						197	T		
G3	D10	ND			-	40.00			97		7	1. 1. 1. 1.			<b> </b>	1		
G3	E1	ND			-1							1 .						
G3	E2	ND			19.5													
G3	E3	ND					7.74											
G3	E4	ND			1000		A 14 S.	77.					100					
G3	E5	ND						100										
G3	£6	ND	5.4.5	1.75	1.00		1 V/ V V	1.49			4.78							
G3	E7	ND	1 Vy 1		19.7			17 (1)	.: .:			1						
G3	E8	ND		1000		515 62	san i Ali K	V .				10.7						
G3	E9	ND						3.1					- 1			I		
G3	E10	ND							1	4.								
G3	F1	ND			1 2 2					1		11 11 11					L	
G3	F2	ND			1000	100	17,345	.151.11					1.7					
G3	F3	ND					489 7,307 to	- 1.		100	100				<u> </u>			
G3	F4	ND			1.00		A. J. A. J. 1957 C.	7.54	4, 10 %			sa si .	S 8					
G3	F5	ND		1 145.1		17 7. 3					2000	1000			111 124	1		
G3	F6	ND							A. 1	11/4/3	2.5							
G3	F7	ND	- 1			9 p - 1 - 9	St. 41 J. 19.				1.73.7		1 4					
G3	F8	ND			1.7	5 8 5			1.	4,	- 32110					1		
G3	F9	ND						100					341.74			1		
G3	F10	ND			7.7		, 484 X X		4 9 2	12.5	200	16 1 1				1		
G3	G1	ND						4		1000	+ 1,1+ A	77 / 1						
G3	G2	ND	12		1.07				11/2 /	7 1,	1,81	171, 1				1		
G3	G3	ND			100	1 22 3	1.11		T	1 A 11 1		V 1				<del> </del>		
G3	G4	ND	100			5.55			1.779	100						1		
G3	G5	ND	10.50				2.5					7.				T		
G3	6	ND		25.3												<b>!</b>		
G3	G7	ND			4:	1. 7		14.			100		-7.5		- 5	1		
G3	G8	ND			11		Arrest St.		7.7		5.7	75 57	1.1					
G3	G9	ND			4 4 14 14	1 - 1	44,7				1 1478.				7	1.00		
G3	G10	ND	7 7		A355	177	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	7 3		24,500	V 102	75 1						
G3	H1	ND				7 5 7 3							1.0			1.	<u> </u>	
G3	H2	ND				100	Albert 1	17.37			14, 14,	7 .44.5				<b></b>		
G3	H3	ND				111 /	5.5			10 11	1 1							
G3	H4	ND		H 1 H 1 L 1	5.75	3-1	flast egt vilsz	1847.3					1.52			İ		
G3	H5	ND	100	2 1750	7.5	19 1 21		1. 1. 4			1.00	115						
G3	H6	ND			1 1 1 1 1				1.00			l	T 1 1 1 1					
G3	H7	ND	7		A 6 1 1 1	9		100	6 . 9		4 1 7 2	l	T			1		
G3	H8	ND				47.7	teritorio de	WHO IN			5.00			777		1		
G3	Н9	ND					, 498 St. 198				9.67.4					1		
G3	H10	ND		100		7 7 7 7						l			1	1		
G3	. 11	ND			5. 5. 5.				1		4		l			1		
G3	12	ND					l .	32, 33			·		1			T		
G3	13	ND				14 A	- Table 1		l				l			1		
G3	14	ND		1			1000		100	- 1								
G3	15	ND		5 8 5 5	1	1 10 200	e ili at tua	91.1		1 10	O. P. J. T.			Maria de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de		T		
G3	16	ND						S	P 35.		475,450.7	J. 17 18.3	1 1	100		1		
G3	17	ND					1	F 5 77			3.50	100	77,					
G3	18	ND			3.3		1 1 1/1 1/1	31.77.11		18,50		[				T		
G3	19	ND			100		K + Y 10/10		10.75			79-11				1		
G3	l10	ND		1000	35 F 17 17 F	- i	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100	T		186	5 - 5	<u> </u>		l	t		
G5	A1	ND	4 1 1 1		10.00		808 3 J 8						1		·	<del>                                     </del>	<u> </u>	
G5	А3	ND						7	V - 1		-		<u> </u>		<del>                                     </del>	<del>                                     </del>		
G5	A5	ND	14.9		1 9 25	V 4, 175	MODEL PLOT	A			75.00	2000			1			
G5	A7	ND			100		77.2	2 1 d 1	1		1.0	<i>A</i>			<b></b>	<u> </u>		
G5	A9	ND											1			<del>                                     </del>		
G5	B2	ND		T		T		<b></b>				<del>                                     </del>	<b></b>		<b></b>	<del> </del>		
G5	B4	ND			l		17.0		ļ							1	<b></b>	
G5	B6	ND			1			47.7				l	<del></del>			<del>                                     </del>		
				·		·	<b></b>	<u> </u>		L	<u> </u>	<b></b>		Li	1	1		

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00012	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	Recount Same	Number of Grid Openings (amphibole)	10
Lab Sample Number	271300244-0004	Number of Grid Openings (chrysotile)	10
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	687 L
Prep	Direct	Sensitivity (amphibole)	4.31E-03 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	4.31E-03 s/cc
Est. Particulate Loading	7%	Area Examined (amphibole)	0.130 mm2
		Area Examined (chrysotile)	0.130 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0004	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

FIL	F	NΑ	M	F٠

0412-003 BA-00012 271300244-0004 TEM-ISO AR 06-26-13 D RS C0.xlsm

FILE TYPE: Original

Recording Rules:

Stopping Rules:

			<u> </u>	
:1	•	Minimum Aspect Ratio	0.00040	Target Sensitivity
5.0	0	Minimum Length (um)	108	GOs required to reach target
0.2	5	Minimum Width (um)	10.000	Maximum Area Examined (mm²)
		•	770	GOs required to reach max area
-facto	or C	alculation:	25	Maximum # of Structures
			408	Estimated # of GOs

# <u>F-1</u>

108 required **Indirect Prep Inputs** Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial

### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid	opening	traverse direct	on:	٧

# Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

# **TEM Asbestos Structure Count**

**LIBBY** 

Laboratory ID:		EMSL27	•	EPA Sample Number:	BA-00012	Tag	AL1	,	
Instrument ID		OL 100 C	X II (27-2	Matrix			Air	•	
Voltage (KV)		100		Air volume (L), du dustfall container		cm²), or	687		
Magnification (do not include X)	4,800	LOV	v	Date received	5/21/2013				
Grid opening area (mm²)		0.0130		Lab Job Numi	27130024				
Scale: 1L =		1.00	0	Lab Sample N	lumber:		27130024	4-0	
Scale: 1D =			0	Number of gri	ds prepared		10		
Primary filter area	(mm²)	385.	0	Prepared by (e.g., M. Smith)			D. Barney		
Secondary Filter Area (mm²)		360.	0	Preparation date			4/15/2009		
Category		Field	•	EPA COC Nu		0412-003			
Filter Status A		ANALYZED	ANALYZED 🔻		Estimated Particulate Loading (%)				

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador	
Analysis date	6/26/2013	
Prep	Direct	
If sample type = air, is there loose material or debris in the cowl?	No 🔻	
Analysis Method	TEM-ISO	
Analysis Method SOP	ISO 10312	
Grid storage location	2713-LIB-56	
Archive filter(s) storage location	ESAT Archive	
F- factor	1	
Lab QC Type	Recount Same	

COMMENTS		

## LIBBY TEM Asbestos Structure Count

0412-003\_BA-00012\_271300244-0004\_TEM-ISO\_AR\_06-26-13\_D\_RS\_C0.xlsm

			ERROR CHECK
EPA SAMPLE ID: BA-00012	Matrix Air	Prep Direct	
LAB SAMPLE ID: 271300244-0004	Analysis Method TEM-ISO	QC Type RS	OK - No errors found
Data Entry by (e.g., M. Smith) A. Fearfield	QA by (e.g., M. Smith) M. Smollock		
Data Entry date 7/11/2013	QA date 7/11/2013		

Grid	Grid	Structure	No. of S	tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank =	= no	CH Not
	Opening	Туре	Primary	Total	Length	Width	100muncation	LA.	OA	СН	NAM			Comments	Sketch	Photo		Counted (e)
G1	A1.	ND		1 1 4 1 1	120 0 00	1.00	1 1 2 2 2 2		1	31,		1						O Garrio a Tol
G1	A3	ND	1.11	Author to	7 . 7 T	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		11.5		J. 545 -	62							
G1	A5	ND	1.50 (1.00 )	Arrest 1	10,447.07	8.2	a Walington Street	1197			7 2 2 7 7		-					
G1	A7	ND					250.00							· · · · · · · · · · · · · · · · · · ·				
G1	A9	ND		W4 3 15	1.00	1.14 9.8	1 1/2	713	2.12	,	9 2.85	14.7			7			
G3	A2	ND		4. 1 E	3.70		7 1 2 2		3 14		-							
G3	A4	ND		and the state of		Sec.	A PERSONAL ASSESSMENT				- <del>(</del>							
G3	A6	ND				4, 4, 7												
G3	A8	ND	1 7 1 1 4	100	100	189	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	200	,						-			
G3	A10	ND									71				<b></b>			

### LIBBY

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	LQ-00001	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	Lab Blank	Number of Grid Openings (amphibole)	10
Lab Sample Number	271300244	Number of Grid Openings (chrysotile)	10
Matrix	Air	Grid opening area	0.013 mm2
Category	Blank	Volume (L) or Area (cm2)	0 L
Prep	Direct	Sensitivity (amphibole)	Blank s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	Blank s/cc
Est. Particulate Loading	1%	Area Examined (amphibole)	0.130 mm2
		Area Examined (chrysotile)	0.130 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:		0.100	

COUNTS (based on countable structures only)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME				

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FΙΙ	⊏	N	4 RA	F٠

0412-003\_LQ-00001\_271300244\_TEM-ISO\_AR\_06-26-13\_D\_LB\_C0.xlsm

FILE TYPE: Original

**Stopping Rules:** 

### LIBBY

### **TEM Asbestos Structure Count**

Laboratory ID:	EMSL27	•	EPA Sample Number:	
Instrument ID	OL 100 (	CX II (27	-2 Matrix	
Voltage (KV)		10	0	Air volume (L), dustfall containe
Magnification (do not include X)	4,800	LO	w	Date receive
Grid opening area	(mm²)	0.0	130	Lab Job Nur
Scale: 1L =		1.0	00	Lab Sample
Scale: 1D =		1.0	00	Number of g
Primary filter area	(mm²)	385	5.0	Prepared by
Secondary Filter A	360	0.0	Preparation	
Category		Blank	•	EPA COC N
Filter Status	ANALYZED	•	Estimated Pa	

EPA Sample Number:	LQ-00001	Tag	AL1	•		
Matrix	Air	•				
Air volume (L), du dustfall container	ist sample area (c area (cm²):	m²), or				
Date received	by lab		6/18/20	)13		
Lab Job Numi	ber:	-	271300	271300244		
Lab Sample N	lumber:		271300	271300244		
Number of grid	ds prepared		3			
Prepared by (	e.g., M. Smith)		D. Barr	еу		
Preparation da	ate	·	4/15/20	09		
EPA COC Nui	mber		0412-0	03		
Estimated Par	ticulate Loadin	ıg (%)	1%			

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescado		
Analysis date	6/26/201	3	
Prep	Direct	•	
If sample type = air, is there loose material or debris in the cowl?	No	•	
Analysis Method	TEM-ISO	•	
Analysis Method SOP	ISO 1031:		
Grid storage location	2713-LIB-	57	
Archive filter(s) storage location	ESAT Arch	nive	
F- factor	1		
Lab QC Type	Lab Blank	•	

3:1	•	Minimum Aspect Ratio		Target Sensitivity
5.0	0	Minimum Length (um)		GOs required to reach target
0.2	5	Minimum Width (um)	0.100	Maximum Area Examined (mm²)
		•	8	GOs required to reach max area
F-fact	or C	alculation:		Maximum # of Structures
Indire	ct Pı	rep Inputs	8	Estimated # of GO required
		Fraction of primary filter		rect prep or ashing

First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial

### Inputs for Serial Dilutions

**Recording Rules:** 

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

Innut	for	Ashina	οf	Secondary	v Filter
mput	101	Asiming	v.	Secondar	y i litei

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:	٧
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## Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

### LIBBY TEM Asbestos Structure Count

0412-003\_LQ-00001\_271300244\_TEM-ISO\_AR\_06-26-13\_D\_LB\_C0.xlsm

554 0440 5 15	, <del></del>		ERROR CHECK
EPA SAMPLE ID: LQ-00001	Matrix Air	Prep Direct	
LAB SAMPLE ID: 271300244	Analysis Method TEM-ISO	QC Type LB	OK - No errors found
	•	//	OK - 110 ellors loulid
Data Entry by (e.g., M. Smith) A. Fearfield	QA by (e.g., M. Smith) M. Smollock		
Data Entry date 7/11/2013	QA date 7/11/2013		
Maximum Area Examined Reached Complete current CO to	on etan		

Grid	Grid	Structure		tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
	Opening	Туре	Primary	Total	Length	Width	Identinication	L	OA	СН	NAM			Comments	Sketch	Photo	EDS	Counted (e)
	E2	ND		1.76 pt	an in the	7.00			75									Quanto (Q)
11	E4	ND	11 11 12 12	100	7.1	150	1,000	1.5			1 7/70	4 1 250 YE S						
11	E6	ND			200		17 11 21					1000						
11	E8	ND	4 1/2 3	200			6 1 25 1 5	1.00			5 57 34 55							
11	E10	ND	100	Anny Sy	444.0554		A. 18 //72		7.7		-	785 THE						
13	12	ND	1.5		F 1578 7.13		4 55 J. 74 D.	4 1 2 4	1.00	\$1.15 p.s.	1777	4. 20			<del></del>	1, 1		
13	. 14	ND	3 1443	7.7	W. 12 S	1.5	7 S. O. W. S.	1981.05		4.15, 6	400 G. 8						70.	
13	16	ND		S. 10 10 1	24.4			1,477,61				74. 775						
13	18	ND			1000		77.5	1 4 4	/			7. 10						
13	110	ND		1 1 1 1	7.5									· · · · · · · · · · · · · · · · · · ·	<del></del>			

Mineral Class (see below)

OA

CH

NAM

Laboratory ID:		EM	SL27		
Instrument ID		JEOL 100 CX II (27- 2)			
Voltage (F	(V)		100		
Mag.	4,80	HIGH			
Grid open (mm2)	ing area	0	013		
Scale: 1L ≠		1.			
Scale: 1D =			1		
Primary filter area (mm2)			385		
Secondar Area (mm			360		
Category (Field, Blank)		F	ield		
Primary filter pore size (um)			0.8		

Grid

Opening

B3

86

Grid

Structure

Type

NO

ND

ND

M

NO

W

EPA Sample Number:	BA-00001	Tag:	AL1	
Matrix (A=Air, D=D Dustfall):	Α			
Air volume (L), dus dustfall container a		1344		
Date received by l	5/	21/2013		
Lab Job Number:	271300244			
Lab Sample Numb	271300244-0001			
Number of grids p	repared .		10	
Prepared by		E. Wyatt-Pescador		
Preparation date		4)	15/2009	
EPA COC Numbe	0412-003			
Secondary filter p		0.2		

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/19/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	12

### F-Factor Calculation (Indirect Preps Only):

**EDXA** 

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:

Minimum Aspect Ratio (circle one):

none. ≥3:1 ≥ 5:1

Minimum Length (um): 5 None.

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

1/2 Fractinding For First rinse

Fraction of primary filter used for indirect prep or ashing for dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

V

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter

(mL) or used for serial dilution
Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

(Yes) N	10
---------	----

, explain:

/		

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Length Width

Analyzed by:	
Analysis date:	
Instrument:	<u> </u>

Grid opening traverse direction (circle one):

Horizontal Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = ves. blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Laboratory ID EMSL27	EPA Sample Number BA-00001	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0001	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions	14-46-4		Minera	al Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	DI	NO																
	103	MO																-
	20	No																
	ra	WO																
	<b>P</b> 9	NO																
	E2	ND														_		
	E4	MO																
	EL	M														_		
	E8	Mo																
	EID	MO																
	FI	MD																
	F3	NO																
	F5	NO																
	F1	Mo																
	F9	M																

Lab Job Number 271300244 Lab QC Type Not QC EPA Sample Number BA-00001 Laboratory ID EMSL27 2713-LIB-56 Grid Storage Loc. Matrix Α Analyst Name E. Wyatt-Pescador 271300244-0001 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	62	ND																
	64	NO																
	Glo	au																
	68	an		,														
	GID	NO																
	HI	ND															-	
	143	av																
	H5	aN																ļ
	47	an																
	H9	ND											_			_		
	I2	W																
	14	ND																
	IU	WO																
	IØ	ND																
	110	MD																

271300244 BA-00001 Lab QC Type Not QC Lab Job Number EPA Sample Number Laboratory ID EMSL27 2713-LIB-56 Grid Storage Loc. Analyst Name Matrix Lab Sample Number 271300244-0001 Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	Ji	200																
	J3	ND															-	
	J5	ND																
	51	au																
	J9	ND																
A3	A2	ND															-	
	A4	ND																
	A6	NO																
	A8	IND																
	AID	NO																
	BI	an																
	<b>B</b> 3	ND														_		
	<b>B</b> 5	avr																
	87	m														_		
	B9	MD																

EMSL27 Laboratory ID 271300244-0001 Lab Sample Number

BA-00001 EPA Sample Number Matrix Α

Lab QC Type Not QC Analyst Name E. Wyatt-Pescador

271300244 Lab Job Number Grid Storage Loc.

2713-LIB-56

6:1	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	CS	au																
	C4	ND																
	Clo	NO																
	CB	ND																
	CID	au																
	DI	NO																
	<i>D</i> 3	m																
	DS	ND																
	107	NO													_			
	p9	1110																
	EZ	NO																
	E4	100														_		
	E6	100																
	EB	NO																
	E10	an																

Laboratory ID	EMSL27
•	
Lab Sample Number	271300244-0001

EPA Sample Number	BA-00001
Matrix	Α

Lab QC Type	Not QC	
Analyst Name		

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	1.14:64:		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	FI	ND																
	F3	ND																
	F5	NO			,													
	F7	NO															_	
	F9	an					_											
	62	NO																
	G4	NO																
	66	au																
	68	no														_		
	GID	no																
	HI	nuo											_	M-1-1-20-20-20-20-20-20-20-20-20-20-20-20-20-				
	H3	ayı																
	H5	ND																
	H7	ND																
	Ha	avi																

271300244 Lab Job Number BA-00001 Lab QC Type Not QC EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name E. Wyatt-Pescador 271300244-0001 Matrix Lab Sample Number Α

	Grid	Structure	No. of Str	uctures	Dime	ensions	14- F6- U		Minera	l Class	-			· · · · · · · · · · · · · · · · · · ·	1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	I2	ND																
	I4	au																
	IL	ND																
	I8	ND																
	IIO	ND																
	Ji	aut																
	<b>13</b>	au																
	Js	au																
	J1	no																
	19	no							,									
A5	Al	ND																
	AZ.	avı																
	A3	NO													-			
	AY	No																-
	A5	avi																

271300244 Lab Job Number EPA Sample Number BA-00001 Lab QC Type Not QC EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Matrix Α 271300244-0001 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A5	AL	ND																
	A7	au						-										
	AB	an																
	199	CN													-			
	AID	an																-
	BI	MO																
	B2	WD																
	ß3	ayı																
	84	NO																
	BS	ND																
	86	au																
	B7	No																
	Bg	an																
	B9	NO									ļ							
	B10	NO																

271300244 Lab Job Number EMSL27 EPA Sample Number BA-00001 Lab QC Type Not QC Laboratory ID 2713-LIB-56 Grid Storage Loc. 271300244-0001 Matrix Analyst Name E. Wyatt-Pescador Lab Sample Number Α

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	- Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
<b>A</b> 5	CI	au										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				·		
	CZ	aN																
	<u>C3</u>	Mo																
	C4	wo																
	C5	m																
	Clo	NO																
	C7	mo																
	CB	avı																
	Ca	Wo																
	CIO	m																
	10	an															·	
	Ds	avi																
	D3	an																
	М	MD																
	DS	an																

271300244 Lab Job Number Not QC EPA Sample Number BA-00001 Lab QC Type EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Matrix Α Analyst Name E Wyatt-Pescador 271300244-0001 Lab Sample Number

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, biank	= no	CH Not
Gilo	Opening	Туре	Primary	Total	Length	Width	(deritinostion	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
AS	DC	an																
	m	ND																
	08	MD																
	DV	au																
	010	aW	·															
	EI	ND												.,				
	E2	NO																
	E3	au																
	EY	WD																
	E5	NO																
	E.6	WO			:													
,	E7	NO																
	EB	au																
	Eq	aM																
	E10	m																

271300244 BA-00001 Lab QC Type Not QC Lab Job Number EPA Sample Number EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Α Analyst Name E. Wyatt-Pescador 271300244-0001 Matrix Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	1J-4:5-4i		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A5	FI	ND																
	F2	DND																
	F3	ND															-	
	F4	ND																
	F5	NO							·	<u> </u>								
	Flo	av																
	F1	NO																
	FB	CVN																
	Fa	W																
	FID	NO																
	61	gn																
	62	MD																
	63	MO																
	64	MO																
	65	WO																

271300244 Lab Job Number BA-00001 Lab QC Type Not QC EPA Sample Number Laboratory ID EMSL27 2713-LIB-56 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Lab Sample Number 271300244-0001 Matrix Α

0	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A5	do	ND													<u></u>			
	67	ND												-				
	OB	au																
	69	an																
	GID	an																
	HI	ND															·	
	HZ	ND																
	HS	NO																
	H4	NO	-															
	H5	an																
	H6	ND																
	H7	an																
	HB	ND																
	49	No																
	H10	w																

271300244 Lab Job Number Laboratory ID EMSL27 EPA Sample Number BA-00001 Lab QC Type Not QC 2713-LIB-56 271300244-0001 Matrix Α Grid Storage Loc. Lab Sample Number Analyst Name E. Wyatt-Pescador

								····	<del></del>								··········	
Grid	Grid Opening	Structure Type	No. of Str	ructures	Dime	nsions	Identification		Minera	i Class	T	Mineral				es, blank		CH Not
	opening .	1,700	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
A5	I1	ND																
	I2	M						-									<del></del>	
	I3	m																
	I4	WO												:	<u> </u>			
	I5	WD																
	Ib	σN																
	II	m																
	I8	OW		,, , <del>,,, ,</del>														
	I9	Wo				·												
	I10	an							·								*	
	JI	1//0																
	52	aN																
	J3	No																
	JY	WD																
	J5	WD																

EMSL27 EPA Sample Number Lab QC Type Laboratory ID BA-00001 Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0001 Matrix Analyst Name Α Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class	• *			· · · · · · · · · · · · · · · · · · ·	1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
A5	56	au																
	51	ND																
	<i>J</i> 8	au					·											
	<i>J</i> 9	WO																
	J10	an																
A7	Al	MO																
	A2	ND																
	<b>P</b> 3	ND																
	<b>P</b> 4	MD																
	<b>A5</b>	an					,											
	A6	an				·												
	A7	avi																
	A6	MD					·											
	Aa	NO												. 1				
	AIO	MD					•											

Laboratory ID EMSL27

Lab Sample Number 271300244-0001

EPA Sample Number BA-00001 Matrix A

Lab QC Type Not QC

Analyst Name £ Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LiB-56

	0.11	Chrischine	No. of Str	ucturee	Dime	nsions			Minera	l Class	, .				1 = y	es, blank	= no	CH No
Grid	Grid Opening	Structure Type	Primary	Total		Width	Identification	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counte
<b>A</b> 7	Bl	ND																
	BZ	an	·															
	63	au							ļ						}			
	ВА	ND								<u> </u>								
	85	avi																<del> </del>
															<u> </u>		<del> </del>	-
			-															-
																-		
					\$72,0													
					1	6/19/											-	
							3											
		<del>                                     </del>													117			
	+									<del> </del>								

Mineral Class (see below)

CH

NAM

OA

LA

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag	4,800 X HIGH
Grid opening area (mm2)	D.013
Scale: 1L =	1
Scale: 1D=	
Primary filter area (mm2)	a 385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter por size (um)	0.8

Grid

Opening

A2

A5

Grid

Structure

Туре

EPA Sample Number:	BA-00002	Tag:	AL1			
Matrix (A≍Air, D=D Dustfall):	A					
Air volume (L), dus dustfall container a	1	<b>33</b> 3				
Date received by I	5/2	1/2013				
Lab Job Number:	271300244					
Lab Sample Numb	per:	271300244-0002				
Number of grids p	repared	10				
Prepared by		E. Wyatt-Pescado				
Preparation date	4/15/2016					
EPA COC Numbe	0412-003					
Secondary filter po	ore size (um)	0.2				

Identification

1		rate in the second
	Analyzed by:	E.Wyatt-Pescador
	Analysis date	6/19/2013
	Method (D=Direct, l=Indirect, lA=Indirect-ashed)	IA
	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
	Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
	Grid storage location	2713-LIB-56
	Archive filter(s) storage location	ESAT Archive
	Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
ms Tillis	Estimated Particulate Loading (%)	5

F-Factor Calculation (Indirect Preps Only):

**EDXA** 

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules: Minimum Aspect Ratio (circle one): Minimum Length (um): Minimum Width (um): 0.35 None

Stopping Rules	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

EDS

Indirect Prep Inputs

man oot i re	p mpate
1/2	Fraction of primary filter used for indirect prep or ashing IFor dust and dustfall, enter 1.0
	First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

Yes	No

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Length

Width

Analyzed by:		
Analysis date:		
Instrument		

Grid opening traverse direction (circle one):

H Horizontal V Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc-1) from the original analysis

Laboratory ID	EMSL27	EPA Sample Number	BA-00002	Lab QC Type	Not QC		Lab Job Number	271300244
Lab Sample Number	271300244-0002	Matrix	Α	Analyst Name	E. Wyatt-Pescado	yr .	Grid Storage Loc.	2713-LIB-56

Grid	Grid Opening	Structure Type	No. of Str	ructures	Dime	nsions	Identification	ļ	Minera	al Class	Γ	Mineral			1 = y	es, blank	= no	CH Not
	Opening	. , , , ,	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
CI	BI	ND																
	B2	ND																
	B3	ND																
	B4	an																
	BS	an																
	Bb	MD																
	B7	NO																
	38	Nρ																
	Bq	avi																
	B10	an																
	CI	avi																
	CZ	am																
	<u>C</u> 3	M																
	CY	aVI																
	CZ	aw												<u></u>				

271300244 BA-00002 Lab QC Type Not QC Lab Job Number EPA Sample Number Laboratory ID EMSL27 Grid Storage Loc. 2713-LIB-56 Analyst Name Lab Sample Number 271300244-0002 Matrix Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions	14		Minera	I Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	Cle	ND																
	<u>C7</u>	MD																
	CB	NO																
	C9	NO																
	CIO	MD													ļ			
	ום	WO									-					_		
	D2	NO															-	
	D3	NO																
	120	ND														<b>_</b>		
	DS	ND																
	<i>S</i> 6	an									<u> </u>							
	07	avi																
	08	NO						<del> </del>								_		
	Da	NO																
	DID	M																

EMSL27 EPA Sample Number BA-00002 Lab QC Type 271300244 Laboratory ID Not QC Lab Job Number Matrix Lab Sample Number 271300244-0002 Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Structure	No. of Str	uaturaa	Dime	ensions			Minera	l Class					1 - 1	es, blank		
Grid	Opening	Type	Primary	Total	Length		- Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	El	ND		**************************************														
	EZ	NO																
	E3	avi																
	E4	aN																
	E5	ND																
	Elo	aW																
	E7	ND																
	E8	ND															-	
	Eq	ND																
	EID	ND																
	FL	ND		· · · · · · · · · · · · · · · · · · ·														
	FZ	ND							<i>.</i>									
	F3	M																
	FY	an																
	FS	M																

ı				
Laboratory ID	EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job N	umber 271300244
Laboratory 15				
Lab Sample Number	271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storag	e Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	tal-ationation		Minera	Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	Flo	au																
	F7	MO															<del>- , - , - , - , - , - , - , - , - , - ,</del>	
	FB	an																
	FQ	ND																
	FID	MO																
	GI	av																
	GZ	MO																
	63	aw																
	64	NO																
	65	NO																
	66	ND																
	67	WD																
	68	NO														_		
	69	Wo														_		
	G10	Mo																

Laboratory ID	EMSL27	EPA Sample Number	BA-00002	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0002	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

					Division					l Olana					1 = 1/	no blank		
Grid	Grid Opening	Structure Type	No. of Str Primary	Total	Length	nsions Width	Identification	LA	OA	Class CH	NAM	Mineral	EDYA	Sketch/Comments	Sketch	es, blank Photo	EDS	CH Not Counted
CI	HI	ND	rimary	Total	Lengur	VVICE				011	IVAIVI	Desc	LDAA	OREICH COMMENTS	- CHOILE			Counted
	112	au																
	H3	ND																
	H4	an																
	45	MD															, .	
	146	au																
	117	NO															<u>.</u>	
	HB	M																
	H9	MO																
	HIO	avi															-	
	I)	IND																
	IZ	aw																
	<b>T</b> 3	an																
	I4	an																
	IS	Mo													_	_		

271300244 Lab QC Type Lab Job Number EPA Sample Number BA-00002 Not QC Laboratory ID EMSL27 Grid Storage Loc. 2713-LIB-56 271300244-0002 Matrix Α Analyst Name Lab Sample Number E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	Class	,				1 <b>=</b> y₁	es, blank	= no	-
Gila	Opening	Туре	Primary	Total	Length	Width	identinodion	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	Ilo	au																
	I7	NO																
	I8	am																
	Iq	W					to the state of th											
	II0	ND																
	Ji	w																
	J2	NO																
	<b>J</b> 3	W																
	J4	avı																
	J5	IND																
	56	MO																
	59	NO																
	18	WO																
	Ja	wo																
·····	J10	M																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	0-14	Churchina	No of Ot-		Dim				Minora	l Class	~				1 = 1/4	es, blank	= 00	
Grid	Grid Opening	Structure Type	No. of Str Primary	Total	Length	ensions Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C3	AI	NO	, , , , , , , , , , , , , , , , , , ,															
	A2	avi																
	N3	WD																
	РЧ	MO							-									
	AS	MO																
	AL	w																
	R1	MO																
	AB	MO																
	Pa	MO																
	AID	W																
	ВІ	ND																
	BS	σγ																
	63	W																
	вч	NO																
	65	avi																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 27130024	4
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E Wyatt-Pescador Grid Storage Loc. 2713-LIB-6	56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera		-				1 = ve	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
<u>C3</u>	Blo	an																<u> </u>
	B7	NO																
	BB	ND																
	89	NO																
	BID	ND																
	CI	W																
	CZ	ND																
	C3	NO																
	<u>C4</u>	MD																
	CE	NO			-													
	Clo	m												_				
	C7	no																
	CB	OW																ļ
	Cd	WO																
	CIO	m																

271300244 Lab Job Number BA-00002 Lab QC Type Not QC Laboratory ID EMSL27 EPA Sample Number 2713-LIB-56 Grid Storage Loc. Matrix Α Analyst Name E. Wyatt-Pescador 271300244-0002 Lab Sample Number

	Grid	Structure	No. of Str	noturee	Dime	ensions			Minera	l Class				<u> </u>	1 = ve	es, blank	= no	
Grid	Opening	Type	Primary			Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments			EDS	CH Not Counted
<u>C3</u>	DI	ND															· · · · · · · · · · · · · · · · · · ·	
	02	ND																
	03	an													 		-	
	μа	ND																
	05	au															-	
	06	ND																
	07	ND																
	80	MD							all and read to									
	09	an																
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	٤١	nn																
	EZ	OM																
	<i>E</i> 3	NO																
	EY	avı																
	65	Mo																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00002
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0002
 Matrix
 A
 Analyst Name
 E Wyatt-Pescador
 Grid Storage Loc.
 2713-L1B-56

	T				Γ			Γ							[			<del>                                     </del>
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class		A Atmosph			1 = ye	es, blank	= no	CH Not
Ond	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
03	EU	ND																
	ET	ND																
	EB	ND																
	Eq	M													-			
	EID	Mo																
	FI	OM																
	F2	MD																
	F3	MO																
	FY	WD																
	F5	DW																
	F6	WD																
	F1	αи																
	FB	ON																
	F9	an																
	F10	ND												-				

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	l Class	•				1 = y	es, blank	= no	
Grid	Opening	Туре	Primary			Width	dentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Ć3	GI	ND																
	62	an																
	63	au																
	64	WO																
	65	W																
	GG	MO																
	67	WO																
	G8	au																
	69	aw																
	GIO	NO																
	HI	NO																
	H2	avı																
	113	WD																
	Hy	m																
	145	WO																

Laboratory ID	EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 27	71300244
Lab Sample Number	271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 27	13-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	I Class	-	,,			1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
03	46	au																
	H7	an															<del>,</del>	
	H8	aw																
	Ha	MD																
	1410	QW																
	II	QW																
	I2	MD																
	<b>I</b> 3	WD																
	I4	WD							,									
	<b>I</b> 5	aW												·				
	I6	aw																
	177	DW																
	IB	an																
	Iq	an							`									
	II0	MD																

271300244 Lab QC Type Not QC Lab Job Number EPA Sample Number BA-00002 EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. E. Wyatt-Pescador Analyst Name 271300244-0002 Matrix Α Lab Sample Number

															4 - 1	es, blank		
Grid	Grid Opening	Structure Type	No. of Str			nsion <b>s</b>	Identification			Class		Mineral		3			EDS	CH Not Counted
			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Prioto	EDS	Counted
<u>C3</u>	JI	W																
	52	W																
	53	M																
	54	MO																
	JS	M																
	16	av																
	51	M																
	18	MD																
	Ja	gw																
	Sio	wo																
CS	Al	ND					·											
	AZ	MD																
	113	WD																
	194	MO																
	<b>A5</b>	Mo																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	i Class					1 = ve	es, biank	= no	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
C5	Clo	W																
	CT	DN													Î Î			
	Co	ND																
	Ca	ND																
	CIO	M															-	-
	10	an																
	02	ND																
	03	ND																
	<b>4</b>	WD																
	29	ND																
	90	W																
	07	NN																
	90	w																
	00	MD																
	DIO	m																

Lab Job Number 271300244 Lab QC Type Not QC BA-00002 EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. E. Wyatt-Pescador Matrix Α Analyst Name Lab Sample Number 271300244-0002

	<u> </u>	Stt	N 604		D:				Minera					· · ·	1 = 1/	es, blank	= no	
Grid	Grid Opening	Structure Type	No. of Str Primary	Total		nsions Width	Identification	LA	OA	CH	NAM	Mineral	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
100	El	NO	Filliary	jotai	Lengin	VVICITI				011	IVAIVI	Desc	LDA	ORECOTO COMMITTEENS				
<u>C5</u>																		
	EZ	ND																
	E3	ND													<u> </u>			
	EY	WD																
	ES	OM																
	Eu	avi				-												
	En	avi																
	E8	NO																
	59	au																
	EIO	avı																
	FI	NO													<u> </u>			
	F2	OVI																
	F3	Wo																
	FY	MO					,											
	FS	Wo			,													

 Laboratory ID
 EMSL27
 EPA S

 Lab Sample Number
 271300244-0002

EPA Sample Number BA-00002

Matrix A

Lab QC Type Not QC

Analyst Name E Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-L1B-56

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class							1 = yes, blank = no			
			Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
<b>C5</b>	Flo	NN																
	F7	an						-		\$ .								
	FB	Wo															· · · · · · · · ·	
	Fq	M																
	FID	W																
	GI	WO																
	62	WD																
	G3	Wo																
	64	MO																
	65	WO																
	66	av																
	67	M																
	68	W																
	G9	W																
	G10	MD																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	0-:4	Ctt	No. of 04m		Dima	nsions			Minera						1 = V	es, blank	= no	
Grid	Grid Opening	Structure Type	No. of Str Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments			EDS	CH Not Counted
CS	HI	No																
	H2	an																
	H3	ND																
	44	MD																
	HS	ND																
	46	NO				-												
	H7	au																
	148	MO																
	Ha	an																
	HID	MD																
	I)	M																
	I2	MO																
	<b>I</b> 3	MO																
	I4	NO																
	I5	an																

271300244 Lab QC Type Not QC Lab Job Number BA-00002 EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. E Wyatt-Pescador 271300244-0002 Matrix Α Analyst Name Lab Sample Number

	Grid	Structure	No. of Str	of Structures Dimensions Identific					Minera		*				1 = ve	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
C5	Do	au																
	I	ND				<del></del>		-										
	I8	100																
	I9	M																
	IID	NO																
	Ji	ND																
	J2	an																
	13	<i>m</i>																
	54	an																
	JS	NO																
	Jb	W																
	11	an																
	JB	ND																
	Ta	WO																
	110	on																

Laboratory ID	EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab	Job Number 271300244
Lab Sample Number	271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid	Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	-				1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	loentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C7	AI	NO																
	AZ	au						·							! !			
	A3	M															···	
	A4	MD															·	
	A5	W																
	Plo	ayı																
	A7	ND																
	AB	NO																
	Aq	avi																
	AID	avi															·	
	BI	NO															·	
	BZ	NO																
	<b>B</b> 3	MD							,									
	B4	NO																
	BS	מעיו																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type	Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	il Class	•				1 = ye	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments			EDS	CH Not Counted
C7	BLO	ND																
	B7	ND																
	BB	ND															-	
	B9	NO																
	BID	ND																
	CI	ND																
	CZ	WD																
	C3	IND																
	C4	M																
	C5	ND																
	Clo	M																
	C7	m																
	CB	MP																
	CA	Mp																
	CIO	W																

Laboratory ID	EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job	Number 271300244
Lab Sample Number	271300244-0002	Matrix A	Analyst Name E Wyatt-Pescador Grid Stol	rage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera						1 = v	es, blank	= no	
Grid	Opening	Type	Primary	Total		Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments				CH Not Counted
c7	DI	ND		:														
	DS	ND																
	D3	ND																
	PG	avi																ļ
	DS	M																
	Db	MD																
	72	MD																
	08	MD																
	PG	MD																
	DID																	
	EI	Mo																
	£۲	m																
	E3	m																
	E4	W																
	ES	m																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Numi	ber 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E: Wyatt-Pescador Grid Storage L	.oc. 2713-L1B-56

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
C7	Eb	W																
	ET	NO																
	E8	WD																
	Eq	WO																
	EID	MD																
	FI	Mo																
	F2	w																
	F3	WD																
	FY	MO																
	F5	Mo																
	F6	MD																
	F7	M																
	FB	MO																
	Fa	an																
	FID	aw													,			

Lab Job Number 271300244 BA-00002 Lab QC Type Not QC EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. E Wyatt-Pescador 271300244-0002 Matrix Α Analyst Name Lab Sample Number

		2710002			T			Ι		* **					,			
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class		3 45 a mad			1 = ye	es, blank	= no	CH Not
On u	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
<u>c7</u>	GI	NO																
	62	an	: 															
	63	NO																
	64	NO								-	ļ							
	65	aw				· · · · · · · · · · · · · · · · · · ·											_	
	Glo	NO																
	67	ND																
	GB	WO																
	69	an												1				
	(2)0	ND												,				
	HI	NO																
	42	MO																
	1/3	W				,												
	HY	0W																
	145	avr																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	Id-atifi-ation		Minera	l Class	-				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C7	46	au																
	H	ND																
	H8	IND																
	49	MD				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												
	HIO	MD																
	II	MD																
	Iz	NO																
	I3	ND																
	IY	an																
	IS	NO																
	Tle	no												-	1			
	T	an					188											
	I8	NO																
	Iq	NO								<u></u>	<u> </u>							,
	IN	an																

271300244 Lab Job Number BA-00002 Lab QC Type Not QC EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 E. Wyatt-Pescador Grid Storage Loc. Matrix Α Analyst Name 271300244-0002 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C7	Ji	an																
	JZ	M								_								
	J3	MO																
	J4	aw.																
	J5	MO																
	16	Mo																
	m	MO																
	JB	aw																
	Ja	an																
	No	WD																
C9	Al	MO														ļ		
	MZ	Wo																
	P13	001												-				
	194	W																
	A5	M																

Laboratory ID EMSL27	EPA Sample Number BA-00002	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0002	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

0	Grid	Structure	No. of Structures		Dimensions		Identification		Minera	i Class					1 = y	es, blank	= no	-
Grid	Opening	Type	Primary	Total	Length	Width	denuncation	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
29	Ale	NO																
	A7	ND						٠.										
	A8	ND																
	A9	ND													]			
	AID	w																
	BI	W																
	Bz	MO	·															
	B3	Mo																
	84	w																
	BS	ND																
	Blo	IVD																
	137	W																
	13%	W		,														
	139	NO																
	B10														i			

271300244 Lab QC Type Not QC Lab Job Number BA-00002 EPA Sample Number EMSL27 Laboratory ID 2713-LIB-56 E Wyatt-Pescador Grid Storage Loc. Analyst Name Matrix Α Lab Sample Number 271300244-0002

	Grid	Structure	Structure No. of Structures		Dimensions		I dontification		Minera		-	· · · · · · · · · · · · · · · · · · ·			1 = ye	es, blank	= no	- Oll Nat
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
ca	CI	MD													-			
	C2	MO						·										
	<i>C</i> 3	Mo																
	C4	11/0																
	C5	mo																
	Clo	MO													ļ			
	C7	MO													,			
	CB	MO																
	<u>C9</u>	an																
	C10	MO																
	Ia	M																
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	μα	M					_											
	29	MD																

271300244 BA-00002 Lab QC Type Not QC Lab Job Number EPA Sample Number EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name E. Wyatt-Pescador 271300244-0002 Matrix Α Lab Sample Number

	Grid	Structure	Structure No. of Structures		Dime	ensions	Identification		Minera	I Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		dentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Ca	Dlo	ND																
	וס	MD						-										
	D&	M																
	D9	<i>w</i>																
	DID	an																
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·				4	e/,_													
					Z	Q(3												
						1												
						-												

Mineral Class (see below)

СН

NAM

Laborator	/ IO:	EMSL27
Instrumen	t ID	JEOL 100 CX II (27- 2)
Voltage (K	(∨)	100
Mag.	4,80	0 X HIGH
Grid open (mm2)	ing area	0.013
Scale: 1L	=	1
Scale: 1E	) =	
Primary fi (mm2)	iter area	385
Secondar Area (mm	•	360
Category Blank)	(Field,	Field
Primary fi size (um)	lter pore	0.8

Grid

Opening

Grid

Structure

Type

MD

MD

ND

<u>aun</u> aun

ND

an an No. of Structures

Total

Primary

BA-00011 t, DF =	Tag:	AL1	
(2)		٦	
rea (cm2), or a (cm2)	70	06	
	5/21	/2013	
	2713	00244	
	2713002	2 <b>44</b> -00 <b>0</b> 3	
ared	1	0	
	D. B	arney	
	<del>-0/18</del>	(115104 <del>/2015</del>	から さいける
·	041	<b>2-0</b> 03	
size (um)	C	0.2	
	ared	2713002 ared 1 D. 8	D. Barney  4115109  0412-003

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/20/2013
Method (D=Direct, l=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC. Recount Same. Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	6

F-Factor Calculation (Indirect Preps Only):

**EDXA** 

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:

Minimum Aspect Ratio (circle one):

none ≥31 ≥5:1

Minimum Length (um): 5 €5

Minimum Width (um): 0.35 None

0004
10
25
_

### F-factor Calculation:

CH Not

Counted

nairect Pre	p inputs
	Fraction of primary filter used for
	indirect prep or ashing [For dust and dustrall, enter 1.0]
	[For dust and dustfall, enter 1.0]
	First resuspension volume or
	denote volume (ml.)

Volume applied to secondary filter (mL) or used for serial dilution

nputs for S	erial Dilutions
:	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

A5

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one)

Yes	No	
ノ		

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by: Analysis date: Instrument:

294 7/1/2013 27-2

Grid op	ening traverse direction (circle one):
н	Horizontal

vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

EDS

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Laboratory ID	EMSL27	EPA Sample Number	BA-00011	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0003	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

				·····		····		<u> </u>			<del></del>					***	<del></del>	
Grid	Grid Opening	Structure Type	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	T	Mineral			1 = y	es, blank	= no	CH Not
		,,,-	Primary	Total	Length	Width		LA	OA_	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
El	B)	ND																
	BZ	NO																
	<b>B</b> 3	an																
	BY	an																
	<b>B</b> 5	an																
	Bo	MD															****	
	<b>B</b> 7	NO																
	B8	NO																
	Ba	WD				,											-	
	B10	Mo																
	CI	ND										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
	CZ	MΩ																
	03	No																
	C4	QΛ																
	C5	aw											- :				~***	

Laboratory ID	EMSL27	EPA Sample Number BA-00011	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0003	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	l Class					1 = 1/4	es, blank	- no	
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
EI	CU	NO																
	C7	NO																
	CB	WO														·		
	C9	an																
	CID	MO																
	DI	WO						-				,						
	OZ	MD																
	03	MO																
	04	M																
	20	MD								,								
	06	_M)_																
	D7	M																
	08	MD																
	D9	M																
	DID	W									ü							

EMSL27 EPA Sample Number BA-00011 271300244 Laboratory ID Lab QC Type Not QC Lab Job Number 271300244-0003 Lab Sample Number Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid Structure No. of Structure			·	1		T	[						, 5554351	I			T 1
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class	·				1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
EI	El	MO																
	EZ	W																
	E3	MO	·															
	EY	OW																
	65	OM																
E3	Al	MO																
	A2	MO	-															
	<b>A</b> 3	MO																
	<b>A4</b>	WO																
	A5	NO																
	A6	WD																
	A7	MO																
	A9	M																
	Aq	QW																
	AID	M																

EMSL27 BA-00011 Lab QC Type 271300244 Laboratory ID EPA Sample Number Not QC Lab Job Number 271300244-0003 Α Lab Sample Number Matrix Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minora	l Class					1 - 1	es, blank	- 00	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments			EDS	CH Not Counted
E3	BI	NO																
	82	M																
	B3	an																
	84	M																
	05	MO																
	86	MO				·												
	<b>B7</b>	m																
	B8	WO																
	89	an												ا				
	BID	an		*···														
	Cl	MD																
	CZ	M																
	C3	MD																
	<u>C4</u>	MD																
	C5	M																

EMSL27 EPA Sample Number BA-00011 Lab QC Type 271300244 Laboratory ID Not QC Lab Job Number 271300244-0003 Matrix Lab Sample Number Α Analyst Name E Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	0-1	644																
Grid	Grid Opening	Structure Type	No. of Str	<del>.</del>		ensions	Identification			l Class		Mineral				es, blank		CH Not
62	0.	4	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
E3	Clo	ND						·					r <del></del>		<u> </u>			
	C7	M																
	CB	ND																
	C9	WO																
	CID	NO																
	DI	M (M										·						
	DZ	M																
	D3	avi																
	μа	aw																
	05	MO																
	06	Mo												: =				
	07	aw																
	Ba	MO																
	09	1/0																
	010	WO																

Laboratory ID EMSL27 EPA Sample Number BA-00011 Lab QC Type Not QC 271300244 Lab Job Number 271300244-0003 Lab Sample Number Matrix Α 2713-LIB-56 Analyst Name E Wyatt-Pescador Grid Storage Loc.

	Grid	Structure	No. of Ot-	4	D:						!				T .			
Grid	Opening	Type	No. of Str Primary	Total	Length	ensions Width	Identification	LA	OA	l Class CH	NAM	Mineral Desc	EDYA	Sketch/Comments	1	es, blank	= no EDS	CH Not Counted
E3	E١	au		, , , ,	20.13.11					011	IVAIVI	Desc	LDAA	-	OKOLON	, note		Course
	E2	an																
	<i>E</i> 3	ND																
	Εų	W								,								
	ES	W																
	Elo	NO																
	£7	MO						·										
	EB	No																
	E9	Mo																
	EID	Mo																
	FI	an		·		····												
	F2	M				· · · · · · · · · · · · · · · · · · ·							,					
	F3	MO																
	FY	M																
	F5	W												•				

Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00011 Lab Job Number 271300244 Not QC Lab Sample Number 271300244-0003 Matrix Α 2713-LIB-56 Analyst Name E. Wyatt-Pescador Grid Storage Loc.

	•	1				<u> </u>					1		<u> </u>	ı ——				
Grid	Grid	Structure	No. of Str	uctures	Dime	ensions	dentification		Minera	Class					1 = y	es, blank	= no	
Gild	Opening	Туре	Primary	Total	Length	Width	identification	LA_	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
ES	HI	an																
	113	Mo																
	46	MO																
	H7	MO																
	На	WO																
				<del></del>														
			S															
			7	<b>(</b> )/														
					180V										17			
												,						
	_																	

Mineral Class (see below)

CH

OA

Laborator	y ID:	EMSL27					
Instrumen	t ID	JEOL 100 CX II (27- 2)					
Voltage (F	(V)	10	90				
Mag.	4,80	0 X	HIGH				
Grid open (mm2)	ing area	0.0	13				
Scale: 1L	.=						
Scale: 10	) =	1					
Primary fi (mm2)	Iter area	38	35				
Secondar Area (mm		360					
Category Blank)	(Field,	Field					
Primary fi size (um)	Iter pore	0.8					

Grid

Opening

Grid

61

Structure

Type

W

• •					
EPA Sample Number:	BA-00012	Tag:	AL1		
Matrix (A=Air, D=C Dustfall):		<b>\</b>			
Air volume (L), dus dustfall container a	6	87			
Date received by la	5/21	/2013			
Lab Job Number:	271300244				
Lab Sample Numb	271300244-0004				
Number of grids p	repared	10			
Prepared by		D.B	arney		
Preparation date		411	ञ्चारुव		
EPA COC Numbe	0412-003				
Secondary filter po	0.2				
		<del></del>			

Identification

	Analyzed by:	E.Wyatt-Pescador
	Analysis date	6/20/213
	Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
	Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
	Grid storage location	2713-LIB-56
	Archive filter(s) storage location	ESAT Archive
	Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
3	Estimated Particulate Loading (%)	7

### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

ecording Rules:		
linimum Aspect Ratio (circ	le one):	
none ≥ 3:1	) ≥ 5:1	
inimum Length (um):	う <del>…</del>	ms 7111/19
Minimum Width (um): 0.0	) S None	7(1/1/3

Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

Indirect Pre	p inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter

(mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter

Fraction of secondary filter used for

Input for Ashing of Secondary Filter ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No. explain:

(	es	) No	•	 	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Primary

Total

Dimensions

Length

Width

Analyzed by:			
Analysis date:			
Instrument:			14.34.3

Grid ope	ening traverse direction (c	ircle	one):
н	Horizontal		

-	<b>`</b>
<b>∢</b> ∵∨	<b>Y</b> ertica
\	/

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

EDS

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Laboratory ID	EMSL27	EPA Sample Number	BA-00012	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0004	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	Structure No. of Structures		uctures	es Dimensions				Mineral Class						1 = yes, blank = no			
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch			CH Not Counted	
GI	Bl	ND																	
	B2	MO																	
	BZ	NO																	
	134	WD																	
	BS	ND																	
	Blo	ay																	
	BJ	WO																	
	BB	ND																	
	Ba	W																	
	BID	NO																	
	CI	Mo																	
	C2	WO																	
	C3	an																	
	C4	M															· · · · · · · · · · · · · · · · · · ·		
	cs	MO																	

271300244 EPA Sample Number BA-00012 Lab QC Type Not QC Lab Job Number Laboratory ID EMSL27 Grid Storage Loc. 2713-LIB-56 Lab Sample Number 271300244-0004 Matrix Analyst Name Α E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	Dimensions Identii			Minera	l Class	•				1 = y	es, blank	= no	011.11.5
Gild	Opening	Туре	Primary	Total	Length	Width	i dominio di di	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
61	Cle	ND																
	C7	ND																
	CB	M																
	cq	ND									, , , , , , , , , , , , , , , , , , , ,							
	CID	M																
	01	an								,								
	02	ND																
	D3	ND																
	04	MO																
	05	Wo																
	26	NO																
	107	WD																
	80	ND																
	109	WD																
	D10	NO																

271300244 Lab QC Type EPA Sample Number BA-00012 Not QC Lab Job Number Laboratory ID EMSL27 Analyst Name Grid Storage Loc. 2713-LIB-56 Lab Sample Number 271300244-0004 Matrix Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
GI	El	ND																
	E2	W																
	£3	ND							· · · · · · · · · · · · · · · · · · ·									
	EY	m													-			
	£5	NO																
	E6	an																
	£7	NO																
	EB	1/0																
	Eq	WO																
	EID	MO																
63	AI	NO																
	AZ	ND								-1								
	<b>P3</b>	W																
	<b>P</b> 4	MO																
	<b>P</b> 5	WD																

Laboratory iD	EMSL27	EPA Sample Number	BA-00012	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0004	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	Class					1 = y	es, blank	= no	
Ond	Opening	Туре	Primary	Total	Length	Width	100/milliodion	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
63	Ale	ND																
	A7	ND																
	A8	NO																
	A9	MD																
	AID	ND																
	BI	NO																
	82	NO																
	ВЗ	MO															-	
	134	ND																
	85	ND																
	BU	MD																
	187	OVI																
	BB	NO																
•	Ва	W																
	B10	m																

Laboratory ID	EMSL27	EPA Sample Number BA-000	012 Lab QC Type	Not QC	Lab Job Number	271300244	
Lab Sample Number	271300244-0004	Matrix A	Analyst Name	E Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56	

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, biank	= no	011314
Grig	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
G3	CI	au																
	C2	ND																
	C3	ND																
	C4	ND																
	C5	1/0																
	Clo	NO														1		<u> </u>
	CT	NO																
	CB	W																
	Ca	ND																
	C10	MO																
	DI	MO				i.												
	02	an																
	<i>p</i> 3	WO																
	<b>D4</b>	an																
	20	WO													1			

Lab Job Number 271300244 Not QC Lab QC Type EPA Sample Number BA-00012 EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Matrix Α 271300244-0004 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	-				1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
63	Do	ND																
	D7	NO																
	D8	dil																
	09	OM .																
	DIO	ON																
	EI	w													<b> </b>			
	E2	NO													1			
	E3	avi																
	EY	ND																
	E5	ON																
	EL	M																
	E7	WD																
	EB	MO																
	Eq	M					_											
	E10	Mo																

271300244 BA-00012 EMSL27 EPA Sample Number Lab QC Type Not QC Lab Job Number Laboratory ID 2713-LIB-56 Lab Sample Number 271300244-0004 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc.

<b>.</b>	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	al Class	-				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary			Width	- Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments				CH Not Counted
G3	FI	NO																
	FZ	ND																
	F3	Wo																
	FY	w																
	F5	ND																
	FU	Wo																
	F7	Wo																
	FB	W																
	F9	Mρ												-				
	FIO	MD					·											
		15.																
		V.	5/2															
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	E0/3													•	

Mineral Class (see below)

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag 4,86	00 X HIGH
Grid opening area (mm2)	0.015
Scale: 1L =	1
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8

Grid

Opening

Grid

Structure

Type

W

M

NO

WD

EPA Sample Number:	BA-00021	Tag:	AL1
Matrix (A=Air, D= Dustfall):	=Du <b>s</b> t, DF =		Α
Air volume (L), d dustfall containe	lust area (cm2), or r area (cm2)		988
Date received by	y lab	5/	21/2013
Lab Job Number	г:	27	1300244
Lab Sample Nur	mber:	27130	00244-0005
Number of grids	prepared		10
Prepared by		D	Barney
Preparation date	9	6/	18/2013
EPA COC Num	ber:	0	412-003
Secondary filter	pore size (um)		0.2

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/20/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	5

### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio (circle one):	
none ≥ 3:1 ≥ 5:1	
Minimum Length (um): 5 <del>5.5</del>	ms 711113
Minimum Width (um): 0.35 None	***

Target Sensitivity:	0.0004
Max Area Examined:	10
- Target # of Structures:	25

### F-factor Calculation:

CH Not

Counted

EDS

Indirect Pr	ep Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or insate volume (mL)
	Volume applied to secondary filter

(mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for As	hing of Secondary Filter
	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Yes If No, explain:

ne)	Yes	

	If sample was analyzed by more than one analyst or across multiple analysis dates, er	nte
ಳ	analysis details below	

No. of Structures

Total

Primary

Dimensions

Length Width

Analyzed by:	
Analysis date:	
Instrument	

Gri	d ope	ning	trav	er	50	direction	(circle	one)

,		-	
*	\ \	loria	zonta
Ţν	y.	ertic	al
`			

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc <sup>-1</sup> ) from the original analys

271300244 Lab QC Type Lab Job Number EPA Sample Number BA-00021 Not QC Laboratory ID EMSL27 2713-LIB-56 Matrix Analyst Name Grid Storage Loc. Α E. Wyatt-Pescador Lab Sample Number 271300244-0005

	Grid Structure		Structure No. of Structures Dimension		nsions			Mineral Class					1 = yes, blank = no					
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
II	CI	20																-
	C2	W																
	C3	MO																
	<u>C4</u>	Mo																
	C5	WD																
	Clo	1100																
	C7	ND																
	CB	ND																
	Ca	M																
	CIO	MO																
	01	ND																
	02	aW																
	23	WO													ļ			
	04	WD																<u> </u>
	05	M																

Lab QC Type 271300244 EPA Sample Number BA-00021 EMSL27 Not QC Lab Job Number Laboratory ID Α 2713-LIB-56 Lab Sample Number 271300244-0005 Matrix Analyst Name E. Wyatt-Pescador Grid Storage Loc.

	Grid Structure No. of Structures				Dimensions Identification				Minera	l Class					1 = ye			
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
ΙI	06	ΝD												42				
	07	aw																
	08	ND						_										
	Pa	NO																
	DID	aW						•										
	Fl	W																
	42	WO	, ,															
	83	OW			.,						,							
	FY	mo																
	F5	MO																
	FO	Mo	,															
	F7	ND																
	FB	NO																
	Fa	σW																
1	FID	MD																

Lab QC Type 271300244 EMSL27 EPA Sample Number BA-00021 Lab Job Number Laboratory ID Not QC 2713-LIB-56 Matrix Lab Sample Number 271300244-0005 Α Analyst Name E. Wyatt-Pescador Grid Storage Loc.

Grid	Grid	Grid Structure	tructure No. of Structures	ructures	Dime	ensions	Identification		Minera	l Class				A Sketch/Comments	1 = yes, blank = no			
Gild	Opening	Туре	Primary	Total	Length	Width	Meritinication	LA	OA	СН	NAM	Mineral Desc	EDXA		Sketch	Photo	EDS	CH Not Counted
I3	BI	ND																
	BZ	NO																
	83	<i>a</i> V																
	84	MD														-		
	B5	aw				,												
	136	NO																
	B7	W																
	88	WO_																
	Ba	NO																
	G10	W																
	N	WD								L								
	De	MD																
	<b>D</b> 3	MO																
	Pα	MD							***									
	25	MD																

Laboratory ID EMSL27	EPA Sample Number BA-00021	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0005	Matrix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid Opening	Structure	No. of Structures		Dimensions		Identification		Minera		-				1 = yes, blank = no			
Grid		Туре	Primary	Total	Length	Width	identinication	LA	OA	СН	NAM	Mineral Desc	EDXA	(A Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
<b>I</b> 3	06	NO																
	07	ND								·								
	D9	M																
	DA	m																
	010	M																
	FI	avı																
	F2	an																
	63	MD												. 3	)			
	fy	WO																
	F5	MO																
	FU	W																
	F1	NO																
	FB	mo																
	Fa	NO																
	F10	ND																

271300244 EMSL27 BA-00021 Lab QC Type Not QC Lab Job Number EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. Matrix Analyst Name E Wyatt-Pescador 271300244-0005 Α Lab Sample Number

		<u> </u>			5:				h di	-I Olana					1 = 1/2	es, blank	= 00	
Grid	Grid Opening	Structure Type	No. of Str			ensions	Identification			Cluss	11000	Mineral	EDV4	XA Sketch/Comments	Sketch	1	EDS	CH Not Counted
			Primary	Total	Length	Width		LA	OA	CH	NAM	Desc	EDXA	Sketch/Comments	Sketch	FIIOLO		Counted
13	<u>II</u>	ND									1							
	IZ	MD						,										
	I3	ND															······································	
	I4	ND						:										
	Ιζ	ND																
				5-1														
				Jun (	1/20													
					12	713												
				.,														

Mineral Class (see below)

СН

NAM

OA

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag. 4,8	300 X HIGH
Grid opening area (mm2)	0.013
Scale: 1L=	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8

Structure

Туре

NO

W

W

Grid

Opening

BB

Grid

EPA Sample Number:	BA-00022	Tag:	AL1			
Matrix (A=Air, D=D Dustfall):	Α					
Air volume (L), dus dustfall container a	1	1016				
Date received by la	ab	5/2	5/21/2013			
Lab Job Number:	271300244					
Lab Sample Numb	Lab Sample Number:					
Number of grids p	10					
Prepared by	D.	D. Barney				
Preparation date	Preparation date					
EPA COC Numbe	04	0412-003				
Secondary filter po	0.2					

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/21/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	K

#### F-Factor Calculation (Indirect Preps Only):

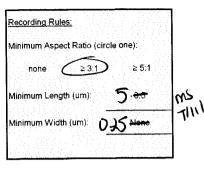
EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments



Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

### F-factor Calculation:

CH Not

Counted

Indirect Prep inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter

(mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mi.) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

_	Col	-
LA = Libb	y-type amph	ibol

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Yes	) <sub>No</sub>	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

> Analyzed by: Flaril Analysis date: Instrument:

No. of Structures

Total

Primary

Dimensions

Length

Width

Grid ope	ning traverse direction (circle one):
Н	Horizontal

Vertical

SUPPLEMENTAL	AIR ANALYSIS:
	_

1 = yes, blank = no

Photo

EDS

Sketch

Achieved sensitivity (cc1) from the original analysis

Are prepped grids acceptable for analysis? If No, explain:	(circle one)	(Yes No			

Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00022 Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0006 Matrix Analyst Name Grid Storage Loc. 2713-LIB-56 Α E. Wyatt-Pescador

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions			Mineral Class							1 = yes, blank = no			
			Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
K2	02	an												-				
	104	MO									_							
	06	MO																
	08	MO																
	OIO	WO																
	EI	an																
	E3	NO																
	E5	an																
	E7	WO																
	Eq	WO																
	FZ	M																
	F4	σVı																
	F6	ØW										_						
	FB	WD																
	FIO	W																

Laboratory ID EMSL27 EPA Sample Number BA-00022 Lab QC Type Not QC Lab Job Number 271300244

Lab Sample Number 271300244-0006 Matrix A Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

										_								
Grid	Grid Opening	Structure Type	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	Τ	Mineral			1 = ye	es, blank	= no	CH Not
	op o,g		Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
K2	GI	ND																
	G3	MO																
	G5	an																
	67	an				**************************************												
	GA	aw												,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	H2	aw																
	H4	MD																
	46	OW																
	H8	Wo																
	HID	Mo																
K4	R)	ND																
,	A3	WD																
	A5	an																
	A7	ND																
	Aq	ND																

	LIBBY TEM Asbestos Structure Count_Air	r-DustEDD_38f	Page 4 of 50 mil NB
Laboratory ID EMSL27 Lab Sample Number 271300244-0006	EPA Sample Number BA-00022  Matrix A	Lab QC Type Not QC  Analyst Name E. Wyatt-Pescador	Lab Job Number         271300244           Grid Storage Loc.         2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	eione		Minera	l Class					1 = v	es, blank	= 00	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
КЧ	<b>B</b> 2	ND																
	84	ND																
	86	an																
	B8	NO																
	BID	an			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,													
	Cl	MO																
	<u>C3</u>	av																
	C5	qn																
	C7	av																
	ca	an																
	EZ	OW																
	EY	aw																
	Eb	WD																
	EB	NO																
	EID	ND																

Laboratory ID	EMSL27	EPA Sample Number BA-00022	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number	271300244-0006	Matrix A	Analyst Name E. Wyatt-Pescador C	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = v	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	A Sketch/Comments	Sketch		EDS	CH Not Counted
K4	FI	ND																
	F3	ND	<u></u> .															
	F5	ND																
	F7	an																
	F9	an															-, <u>.</u>	
	62	av										,						
	GY	an			.,													
	66	NO																
	68	NO																
	GID	ND								_								
	HI	NO					·											
	113	ND																
	45	NO																
	47	αγγ																
	Hd	ND																

Laboratory ID EMSL27 EPA Sample Number BA-00022 Lab QC Type Lab Job Number 271300244 Not QC Lab Sample Number 271300244-0006 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

Grid				1		1	l												
Grid Opening	Opening	Opening	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = ye	es, blank	= no	<u> </u>
Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted		
ВЧ	MO																		
86	ND																		
BB	NO																		
					Dheo														
					1	7/1/20													
						3	/	•								<u>.</u>			
							****												
	B4 86	B4 MO 86 MD	BY MO 86 MD	BY MD Primary Total  BL MD	BY MO BB NO  Primary Total Length  BY MO BB NO	BY NO Length Width  BB NO	BY NO BB NO	BY NO RIGHT NOTAL Length Width LA	BY NO Service Total Length Width LA OA  BY NO Service Total Length Width LA OA  BY NO Service Total Length Width LA OA  BY NO Service Total Length Width LA OA  BY NO Service Total Length Width LA OA  BY NO SERVICE TOTAL COA  BY NO SERVICE TOTAL C	BY NO Service Total Length Width LA OA CH	BY NO September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 September 10 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Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Sec	BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec EDXA  BY NO Sec 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Sketch/Comments Sketch Photo  BY NO Section Section Section Section Section Photo  BY NO Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Section Se	BY NO Second Sketch/Comments Sketch Photo EDS  NO Second Second Sketch/Comments Sketch Photo EDS  NO Second Second Sketch/Comments Sketch Photo EDS  NO Second Second Second Sketch/Comments Sketch Photo EDS  NO Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Second Se		

Mineral Class (see below)

OA

СН

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag. 4,80	00 X HIGH
Grid opening area (mm2)	0.013
Scale: 1L=	1.
Scale: 1D =	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8

Grid

Opening

Al

AS

B2

B4

Grid

M2

Structure

Type

aN

W

an

an

ND

ND

EPA Sample		1	Ta tata.
Number:	BA-00029	Tag:	AL1
Matrix (A≃Air, D=D Dustfall):		A	
Air volume (L), dus dustfall container a			1145
Date received by la	ab	5/	21/2013
Lab Job Number:		27	1300244
Lab Sample Numb	per:	27130	00244-0007
Number of grids p	repared		10
Prepared by		D	Barney
Preparation date		4	15 04 4 <del>8/2019</del>
EPA COC Numbe	or:	0	412-003
Secondary filter pe	ore size (um)		0.2

Identification

LA

	Analyzed by:	E.Wyatt-Pescador
	Analysis date	6/21/2013
	Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
	Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
	Grid storage location	2713-LIB-56
	Archive filter(s) storage location	ESAT Archive
	Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
W. III	Estimated Particulate Loading (%)	6

#### F-Factor Calculation (Indirect Preps Only):

EDXA

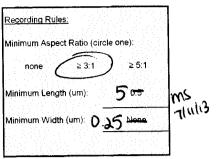
Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments



Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

EDS

Indirect Prep Inputs

	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
-	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Yes of the No, explain:

_	If sample was analyzed by more than one analyst or across multiple analysis dates, ente
	analysis details below.

No. of Structures

Primary

Total

Dimensions

Length

Width

Analyzed by:	
Analysis date:	
Instrument	

Grid opening	traverse	direction	(circle	one

H Horizontal
Vertical

	SUPPL	EMENTAL	. AIR	ANAL	YSI
--	-------	---------	-------	------	-----

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

271300244 EMSL27 EPA Sample Number BA-00029 Lab QC Type Not QC Lab Job Number Laboratory ID Lab Sample Number Matrix Analyst Name Grid Storage Loc. 2713-LIB-56 271300244-0007 Α E Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsio <b>ns</b>	Identification		Minera	Class					1 = y	es, blank	= no	
Gila	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
MZ	CI	NO																
	C3	an																
	C5	an																
	C7	aw																
	C9	an																
	02	AN C																
	py	W																
	106	Mo																
	กร	an																
	DIP	NO																
	EI	av																
	E3	ND																
	<b>E</b> 5	lw																
	E7	No																
	Ed	W																

Laboratory ID	EMSL27	EPA Sample Number	BA-00029	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0007	, Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	dentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
M2	F2	NO																
	FY	QVI																
	Fb	W															· · · · · · · · · · · · · · · · · · ·	
	FB	WD								.,,								
	FIO	OW								_								
MY	B2	MD					,,,,,,										,	
	вч	ND																
	BV	WD																
	ලු	WO																
	810	aw																
	CI	MO																
	C3	MD																
	C5	ND																
	C1	MD																
	Ca	MO																

 Laboratory ID
 EMSL27

 Lab Sample Number
 271300244-0007

EPA Sample Number BA-00029

Matrix A

Lab QC Type Not QC

Analyst Name F Wyatt-Pascador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

Analyst Name E. Wyatt-Pescador 1 = yes, blank = no Structure No. of Structures Dimensions Mineral Class Grid Identification Grid **CH Not** Mineral Opening Type Sketch Photo EDS Counted Primary Total Length Width LA OA СН NAM Desc EDXA Sketch/Comments W MH 82 aW F4 W F6 FB WO FW W W GI 63 W W G5 W 67 69 WD H2 MD 44 W HU M M HB W 410

271300244 Lab QC Type BA-00029 Lab Job Number EMSL27 EPA Sample Number Not QC Laboratory ID 2713-LIB-56 Lab Sample Number Matrix Analyst Name Grid Storage Loc. 271300244-0007 Α E. Wyatt-Pescador

O-:-1	Grid	Structure	No. of Str	uctures	Dime	ension <b>s</b>	Identification		Minera	I Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		tdentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
MY	II	ND																
	I3	NO																
	IS	ND																
	I7	MD																
	I9	an																
	52	No					Ad Fight Worst rose black and											
	54	an																
	56	ND																
	18	ND																
	JIO	MD							AU-1975.									
		5																
		A)	W 6/3	1/-														
			we 6/8	13013	7													

Mineral Class (see below)

Laboratory ID:	EMSL27					
Instrument ID	JEOL 100 GX II (27- 2)					
Voltage (KV)	100					
Mag 4,80	00 X HIGH					
Grid opening area (mm2)	0.013					
Scale: 1L =	1					
Scale: 1D=	1					
Primary filter area (mm2)	385					
Secondary Filter Area (mm2)	360					
Category (Field, Blank)	Field					
Primary filter pore size (um)	0.8					

Grid

Opening

Grid

Structure

Type

ND ND

M

EPA Sample Number:	<b>BA-0003</b> 0	Tag:	AL1			
Matrix (A=Air, D=D Dustfall):	Α					
Air volume (L), dus dustfall container a		1145				
Date received by I	ab	5/	/21/2013			
Lab Job Number:		27	1300244			
Lab Sample Numb	per:	271300244-0008				
Number of grids p	repared	10				
Prepared by		D	. Barney			
Preparation date		4	115109			
EPA COC Numbe	0412-003					
Secondary filter p	0.2					

Identification

LA

	Analyzed by:	E.Wyatt-Pescador
	Analysis date	6/21/2013
	Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
	Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
	Grid storage location	2713-LIB-56
	Archive filter(s) storage location	ESAT Archive
	Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
40.5 80.5	Estimated Particulate Loading (%)	3

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:  Minimum Aspect Ratio (circle one):	
none	ms
Minimum Width (um): 0 25 None	ms TIII

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

Indirect Pre	p Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filte (mL) or used for serial dilution

	l'
Inputs for S	erial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter

			Fraction of secondary filter used for ashing

LA = Libby-type amphibole

BI

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:

CH Not

Counted

EDS

<del></del>	If sample was analyzed by more than one analyst or across multiple analysis dates, enter
Ö	analysis details below

No. of Structures

Total

Primary

Dimensions

Length

Width

Analyzed by:		
Analysis date:		
Instrument:		988 <u>– E.</u>

Grid o	pening	traverse	direction	(circle	one)

H Horizontal Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc 1) from the original analysis

EPA Sample Number BA-00030 Lab QC Type Lab Job Number 271300244 Laboratory ID EMSL27 Not QC Matrix 2713-LIB-56 Lab Sample Number 271300244-0008 Analyst Name Grid Storage Loc. Α E Wyatt-Pescador

6.1	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	*****				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
02	D2	aN																
	104	ND																
	D6	dNI																
	DB	ND																
	ora	ND																
	El	MD																
	E3	ND																
	E5	an																
	E7	W																
	E9	MD																
	F2	NO																
	F4	M																
	F6	NO																
	FB	ND																
	FIO	W																

EMSL27 EPA Sample Number BA-00030 Lab QC Type Lab Job Number 271300244 Laboratory ID Not QC Matrix Lab Sample Number 271300244-0008 Α Analyst Name Grid Storage Loc. 2713-LIB-56 E Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	al Class				DXA Sketch/Comments	1 = yes, blank = no			
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc					EDS	CH Not Counted
02	GI	ND																
	63	avı																
	65	NO																
	67	MD																
	G9	NO									:	·						
40	BI	ND																
	<b>B3</b>	an																-
	85	avn																
	<b>B</b> 7	aw																
	Bq	ND.																
	EZ	an																=
	E4	αN																
	EV	an				-												
	EB	ďη																
	E10	W																

Lab QC Type 271300244 EMSL27 EPA Sample Number BA-00030 Not QC Lab Job Number Laboratory ID Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 Lab Sample Number 271300244-0008 E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	l Class					1 = y	es, blank	= no	
Gild	Opening	Туре	Primary	Total	Length	Width	denuncation	LA	OA	СН	NAM	Mineral Desc	EDXA	A Sketch/Comments		Photo		CH Not Counted
04	FI	aN																
	F3	m																
	FS	an						, , ,										
	F1	aw					,											
	Fa	on																
	62	m																
	64	ND																
	GG	OW																
	68	OW																
	GID																	
	HI	WO																
	H3	σW																
	H5	MD																
	H1	MD				:												
	149	MD																

Lab QC Type EMSL27 EPA Sample Number BA-00030 Lab Job Number 271300244 Laboratory ID Not QC Lab Sample Number 271300244-0008 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Shurrah una	N= -6.04=		D:				h 4:						4			
Grid	Opening	Structure Type	No. of Str Primary	Total	Length	ensions Width	Identification	LA	OA	i Class CH	NAM	Mineral Desc	EDYA	Sketch/Comments	Sketch	es, blank Photo	= no EDS	CH Not Counted
04	I2	ND	Timary	rotar	Lengui	YYIGUT			5	011	IVAIVI	Desc	EDAA	Sketchiconninents	OKELOH	THOLO		Counted
,																		
	I4	ND							· · · · · · · · · · · · · · · · · · ·									
	I6	NO																
	IB	an		.,														
	II0	NO																
	JI	av																
	J3	an																
	J5	NO			:													
	57	ND																
	J9	ND																
		20															****	
		30	6/2	1/						,								
			10 6/2	12013										<u> </u>				

Mineral Class (see below)

CH

OA

LA

Laboratory ID:	EMSL27						
Instrument ID	JEOL 100 CX II (27- 2)						
Voltage (KV)	100						
Mag 4,8	00 X HIGH						
Grid opening area (mm2)	0.013						
Scale: 1L =							
Scale: 1D =	1						
Primary filter area (mm2)	385						
Secondary Filter Area (mm2)	360						
Category (Field, Blank)	Field						
Primary filter pore size (um)	0.8						

Grid

Opening

AS

Al

Grid

Q2

Structure

Type

an

DU

W

W

EPA Sample Number:	<b>B</b> A-00037	Tag:	AL1				
Matrix (A≃Air, D=□ Dustfall):	Oust, DF =		Α				
Air volume (L), du dustfall container i		7	'39				
Date received by I	ab	5/2	/2013				
Lab Job Number:		2713	300244				
Lab Sample Numl	ber:	271300244-0009					
Number of grids p	prepared		10				
Prepared by		E, Wyat	-Pescador				
Preparation date		4/1	5/2009				
EPA COC Numbe	Pr:	041	2-003				
Secondary filter p	ore size (um)		0.2				

Identification

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/25/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	5

#### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules: Minimum Aspect Ratio (circle one): ≥ 5:1 Minimum Length (um): Minimum Width (um): 0.35 None

Stopping Rules:	
Target Sensitivity.	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

EDS

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or 100 rinsate volume (mL)

> Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Width

Length

No. of Structures

Primary

Total

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

(Yes) N	10
---------	----

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:			
Analysis date:			
Instrument:			

Grid opening	traverse	direction	(circle	опе)
GIN OPENING	0 0 4 61 90	di ocuon	(On Gio	0,10,

V Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc-1) from the original analysis

Laboratory ID	EMSL27	EPA Sample Number	BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	<b>,</b>				1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q2	BI	an																
	82	ND																
	<b>ල</b> 3	NO																
	DH	an																
	સ	au																
	86	ND								315111				<u> </u>				
	67	an																
	88	M																
	B9	M																
	BID	an																
	CI	NO		, 100														-
	C2	ay																
	C3	ND															-	
	CY	avn												· · · · · · · · · · · · · · · · · · ·				
- William	ের	m														,		*****

Laboratory ID EMSL27 EPA Sample Number BA-00037 Lab QC Type 271300244 Not QC Lab Job Number Lab Sample Number 271300244-0009 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	al Class					1 = v	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments				CH Not Counted
Q2	Co	ND																
	C7	ND																
	CB	NO																
	Ca	NO																
	C10	an																
	DI	WD																
	02	MD																
	D3	MD																
	DA	ND																
	05	WD																
	Va	MD																
	07	MO																
	80	m																
	Nd	MO																
	DIO	ND																

Laboratory ID EMSL27 EPA Sample Number BA-00037 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0009 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	1	_					<u> </u>			· · · · ·								1
Grid	Grid Opening	Structure Type	No. of Str		Dime	ensions	Identification		Minera	Class	I	Mineral			1 = ye	es, blank	= no	CH Not
			Primary	Total	Length	Width	T T T T T T T T T T T T T T T T T T T	LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
Q2	EI	IVO																
	E2	M																
	E3	MD											·					
	EY	W																
	E5	W																
	Elo	NO																
	E7	an																
	EB	m																
	Eq	an																
	ED	an																
	FI	ΔV																
	F2	NO.																
	F3	ND																
	FY	NO											_					
	F5	an																

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

			<u> </u>					r					au-r escauoi	1			T
Grid	Grid Opening	Structure Type	No. of Str	ructures	Dime	ensions	Identification		Minera	al Class	Т	Minaral		1 = y	es, blank	= no	ļ <u>.</u> !
	Оренну	Type	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R2	Flo	ND															
	F1	NO															
	FB	MO															
	Fq	NO															
	FIO	MO															
	GI	M															
	G2	<b>W</b>															
	G3	m															
	G4	MO				<u> </u>											
	G5	M															
	Go	MO															
	67	MO															
	Go	an		_													
	Ga	Ø															
	G10	M															

Laboratory ID EMSL27 EPA Sample Number BA-00037 Lab QC Type Not QC Lab Job Number 271300244

Lab Sample Number 271300244-0009 Matrix A Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q2	HI	Mo																
	H2	Wo																
	H3	W																
	HY	an																
	115	Mo																
	Hb	MO																
	H7	Mo													· · · · · ·			
	148	Mp				3.0												
	49	aw																
	410	MD																
	II	m																
	<b>I</b> 2	MD														****		
	I3	Mp															· · · · · · · · · · · · · · · · · · ·	
	I4	MO																
	I5	m																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number 271	300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc. 2713	3- <b>LIB-</b> 56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	I Class					4			
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	FDXA	Sketch/Comments	Sketch	es, blank Photo	= no EDS	CH Not Counted
Q2	I6	W											20,01	ONCOM COMMITTEE	<u> </u>	, mete		Counted
	I7	an																
	I8	ND															10/10/	
	I9	dn																
	IIO	M																
	Ji	αN																
	52	ND																
	J3	MO																
	JY	m																
	JE	M																
	No	m																
	57	W																
	18	ND																
	M	MO						_										
	SIO	m																

EPA Sample Number BA-00037 Lab QC Type 271300244 EMSL27 Laboratory ID Not QC Lab Job Number 271300244-0009 Matrix 2713-LIB-56 Lab Sample Number Α Analyst Name E. Wyatt-Pescador Grid Storage Loc.

Owind	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class		-			1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
Q4	Al	NO													·			
	A2	an																
	A3	Mo																
	AY	WO																
	A5	W															<del></del>	
	AL	aw				<b></b>		····										
	P17	σW					71											
	<b>A8</b>	MD																
	Ad	WO																
	1910	WO																
	BI	M		M. T.														
	B2	NO									***							
	ВЗ	ND																
	<i>B</i> 4	m				· · · · · · · · · · · · · · · · · · ·												
	<b>b</b> 5	m					*.											

EPA Sample Number Laboratory ID EMSL27 BA-00037 Lab QC Type Not QC 271300244 Lab Job Number Lab Sample Number 271300244-0009 Matrix Α Analyst Name 2713-LIB-56 E. Wyatt-Pescador Grid Storage Loc.

	Grid	Structure	No. of Str	noture.	Dimo	nsions			Minora	ıl Class					4			
Grid	Opening	Type	Primary	Total	Length	Width	- Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	es, blank Photo	= no EDS	CH Not Counted
QH	Blo	an																
	87	ND															-	
	B8	NO																
	BA	no																
	BID	W																
	CI	ND																
	C2	avi													_			
	C3	NO																
	C4	MO																
	CS	OW																
	Clo	MO																
	C7	ow																
	CB	OW																
	Cg	WD																
	C10	W																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = ve	es, blank	= DO	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q4	p	NO																
	02	ND																
	03	m	,															
	64	an																
	05	NP																
	DV	ND																
	07	W																
:	80	ND									_							
	Dd	ND																
	010	MD																
	目	W												·				
	EZ	MO																
	E3	avi						:							7.7.			
	EY	avi													·			
	ES	an																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC	Lab Job Number 2713002
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-

				· · · · · · · · · · · · · · · · · · ·	<u> </u>		<u></u>							,				
Grid	Grid Opening	Structure Type	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class		Mineral			1 = yo	es, blank	= no	CH Not
<del></del>	- p		Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
Q4	EU	NO	-												-			
	E7	NO																
	E8	an																
	٤٩	MD																
	EID	Mp					_											
	FI	M																
	F2	mo																
	F3	am																
	FY	WO																
	15	an																
	Fre	M								,								
	F1	Mo																
	F8	an								- Marie Land								
	Fa	M																
	FIO	M																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	l				T													
Grid	Grid Opening	Structure Type	No. of Str			ensions	Identification			l Class	Τ.	Mineral				es, blank		CH Not
		_	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
84	61	W							<i>-</i>									
	62	NO							<u> </u>									
	63	ND																
	GY	MD																
	65	MO																
	66	MD																
	67	MD																
	GB	NO																
	Ga	M	-															
	610	W																
	HI	ND														-		
	H2	NO																
	H3	NO																
	H4	NO							:						-			
	HS	m						-										

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	ensions	dentification		Minera	i Class					1 = ve	es, blank	= no	
Gna	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo		CH Not Counted
R4	HO	M																
	H7	ON							•									
	ИB	Wo	i. 10-771 h 10-00															
	H9	W																
	HID	140																
	Ιι	NO																
	Iz	ND	·															
	<b>I</b> 3	W	:															
	叫	W																
	IS	M																
	Ilo	No																
	I7	gw																
	I3	M																
	Ia	Mo																
	<u> 40</u>	W		Patronomon .														

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

[	T				T	· · · · · · · · · · · · · · · · · · ·			<del></del>		- ,			<u> </u>				
Grid	Grid Opening	Structure Type	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class	т	Mineral			1 = ye	es, blank	= no	CUNA
	Operang	туре	Primary	Total	Length	Width		LA	OA_	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q4	JI	au																
	J2	an				-												
	J3	an																
	J4	avı																
	J5	MO													-			
	The	MD																
	J7	αW																
	B	p/10																
	59	m	-															
	J10	W																
Q6	Al	NO																
	A2	MO																
	PB	MO				-												
	<b>A</b> 4	m																
	A5	mo					· .											

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E Wyatt-Pescador Grid Storage Loc.	2713-LIB-56

044	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
ab	Ale	an																
	An	NO																
	AB	MD													-			
	PA	m																
	Alo	an																
	BI	MO																
	<b>B</b> 2	MD																
	63	MO																
	BY	on																
	<b>B</b> 5	M																
	BU	MO																
	137	M																
	BB	MO																
	Ba	W																
	910	MO																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

0.11	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	·				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
Q6	CI	ND																
	CZ	NO																
	C3	NO											····					
***************************************	C4	WD																
	C5	M																
	CV	WD				****												
	57	Mo																
	CB	mo																
	Cd	W																
	CIO	m															·	
	la la	mo																
	OS	an	· -									****						
	B	mo	www.								***							
	04	mo																
	05	M	——————————————————————————————————————															

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00037
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0009
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Prim₂ry	Total	Length	Width	dentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Ro	00	NO																
	רס	wo		, -,		, 11 11 11 11 11 11 11 11 11 11 11 11 11	,							,				
	08	Mo																
	M	MO															:	
	010	MO																
	EI	mo																
	EZ	MO																
	E3	MO																
	EY	MO																
	E5	m		, , , , , , , , , , , , , , , , , , , ,							-							
	E6	MO		-														
	E7	W																
	EB	mo																
	Eq	MD																
	EID	MO																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00037
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-000%
 Matrix
 A
 Analyst Name
 E. wyatt-Pescador
 Grid Storage Loc.
 2713-LIB-56

	Outd	C4	No. of Ob-	 Dima				Minera	l Class	····	[			1 = 10	es, blank		
Grid	Grid Opening	Structure Type	No. of Str Primary	Length	nsions Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch			CH Not Counted
Q6	FI	an														····	
	F2	mo															
	13	an															
	FY	MD						-									
	F5	ND														·· · · · · · · · · · · · · · · · · · ·	
	FU	MO															
	F1	MD															
	FB	MO															
	Fa	W	3														
	FIO	MD															
	GI	NO															
	62	NO														_	
	63	NO			·												
	GU	WD															
	<del>ড</del> ু	MD	-														

	1		3.5		10			43	١.
Laboratory ID		133	EI	MS	L2	7		ंः	
•									ì
Lab Sample Number		271	30	02	44	-00	09		ì

BA-00037 EPA Sample Number Matrix Α

Lab QC Type Analyst Name

Not QC E. Wyatt-Pescador

271300244 Lab Job Number Grid Storage Loc.

2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
Q6	(20	MO																
	G7	W							.,,									
	66	W																
	69	OW																
	GID	WD																
	HI	m				-,												
	H2	Mo	;															
	H3	WΩ				······································												
	144	W																
	145	m															<del></del>	
	46	m																
	H7	OM																
	H8	MO																
	H9	MO																
	HID	NO																

Laboratory ID EMSL27 EPA Sample Number BA-00037 Lab QC Type Not QC Lab Job Number 271300244

Lab Sample Number 271300244-0009 Matrix A Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No of Ch		Dime	maiana			Minera	l Class					1 - 1/4	es, blank	- no	
Grid	Opening	Type	No. of Str Primary	Total	Length	ensions Width	- Identification	LA	OA	CH	NAM	Mineral Desc	FDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
QV	ΙI	MO																
	<b>I</b> 2	NO																
	I3	WD																
	I4	No																
	IS	W																
	I6	ND	ů.															
	I7	avi																
	I8	ND																
	I9	MD											-					
	Iw	NO																
	JI	NO																
	JZ	an																
	13	an																
	54	ay																
	J5	M																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E Wyatt-Pescador Grid Storage Loc	2713-LIB-56

	Grid Structure	Structure	No. of Structures		Dimensions		T	Mineral Class							1 = yes, blank = no			
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q6	The	MO																
	J7	WO																
	JB	MD	:															
	J9	W	;															
	510	MD																
QB	Al	<i>a</i> v																
	AZ	avi																
	A3	W																
	<b>A4</b>	M																
	PK	MO																
	Alo	Wo																
	AT	M	F. V.															
	AB	W																
	Ha	110																
	AIO	W	fe .															

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = yes, blank = no			
	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
08	BI	NO																
· · · · · · · · · · · · · · · · · · ·	B2	W																
	133	WO																
	134	MO																
	BS	mo																
	86	Mo																
	137	m																
	88	MO																
	GA.	MD																
	BID	WO																
	CI	aw										·						
	C2	W																
	03	MD	,															
	C4	MO																
	CS	σM																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
ष्रिष्ठ	Clo	ND	•															
	C7	W																
	C8	QM															· · · · · · · · · · · · · · · · · · ·	
	C9	Wo					1-2-1-2-1-2-1-2-1-2-1-2-1-2-1-2-1-2-1-2											
	CIO	mo						· · · · · · · · · · · · · · · · · · ·										
	DI	W																
	02	gw																
	D3	ND											************					
	04	ON																
	DS	mo																
	Db	mo	1.			· · · · · · · · · · · · · · · · · · ·												
	<u>ra</u>	ow																
	08	MO																
	09	mo																
	DID	MO																

271300244 Lab QC Type Lab Job Number EPA Sample Number BA-00037 Not QC EMSL27 Laboratory ID 2713-LIB-56 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. Lab Sample Number 271300244-0009

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	400-410				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q&	EI	ND																
	EZ	ND																
	E3	avi															••••	
	EY	Mo	<i>f</i> .															
	ES	MO																
	Elo	MO																
	E7	mo																
	E8	Mo																
	Eq	MO																
	EID	MO																
	FI	No																
	FZ	MO																
	F3	1,00																
	FY	WO																
	F5	140	f.				• .											

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC I	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador G	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	actures	Dime	ensions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
88	FU	W																
	F7	ND				, <del>-</del>												
	FB	WD																
	F9	wo															West of the second	
	F10	WO																
	61	M		11 HV4 1 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -					<i>-</i>									
	62	WO																
	63	M	ê															
	64	WO																
	65	No	;															
	Clo	m																
	67	140					·											
	68	MO																
	Ga	W																
	G10	m																

Laboratory ID EMSL27

Lab Sample Number 271300244-0009

EPA Sample Number BA-00037

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	14-4:5-4:-		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q8	HI	NO																
	H2	an																
	H3	an																
	44	NO				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												
	H5	MO																
	H6	NO	-															
	H7	MO																
	HB	MO																
	H9	ND															····	
	HIO	NO																
	II	110				4												
	I2	gvy																
	I3	OW										,						
	I4	W																
	I5	IND																

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713 <b>-LIB-</b> 56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
<b>Q</b> 8	Ilo	ND																
	I7	M																
	I8	W										·					<del></del>	
	I9	m																
	IID	MD																
	JI	MO						,										
	JZ	MO				,						,						
	J3	MO																
	54	MO																
	J5	m				47-7-10-1								20000000				
	JV	W																
	51	MO																
	58	WD	1.															
	JA	W																
	510	MD															·	

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class	•				1 = ve	es, blank	= no	
Grid	Opening	Туре	Prim₃ry	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
Q10	BI	ND																
	βz	no																
	B3	w						· · · · · · · · · · · · · · · · · · ·										
	B4	W																
	BJ	ND																
	86	W																
	BI	MO										:					-, ·	
	B9	m																
	B9	no				<del> </del>			<del>- 74</del>									
	<b>B</b> 10	NO							-010								·	
	CI	avi	4.															
	CZ	an							J==-									
	C3	m																
	СЧ	an							***									
	C5	an																

Laboratory ID EMS	SL27 EPA Sample Number	er BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 2713002	.44-000∋ Matr	×	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	rictures	Dime	ensions	VII.		Minera	i Class					1 = 1/4	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
QID	Clo	NO																
	C7	MD													-			
	୯୫	avı										·						
	Cq	NO																
	CID	m																
	ρI	NO																
	D2	NO																
	D3	NO																
	<i>D</i> 4	an																
	29	ND																
	Dle	w				34412-7												
	07	ND									later .							
	80	MO							*****				****				:	
	Da	MO																
	ola	avi																

Laboratory ID	EMSL27
-	
Lab Sample Number	271300244-0009

EPA Sample Number BA-00037 Matrix

Lab QC Type Not QC Analyst Name E. Wyatt-Pescador

271300244 Lab Job Number Grid Storage Loc.

2713-LIB-56

	Grid				T	·												
Grid	Grid Opening	Structure Type	No. of Str	ructures	Dime	ensions	Identification		Minera	l Class	·	Mineral			1 = ye	s, blank	= no	CH Not
	Opening .	,,,,,,	Primary	Total	Length	Width		LA	OA	сн	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
QID	EI	No																
	E2	Mo		·														
	E3	an																
	E4	MD																
	ES	mo																
	Elo	<i>N</i> 0																
	£7	an	4															
	EB	Mo	-															
	E9	MD																
	EW	aw				777844												
	FI	Mo																
	Fr	mo																
	F3	Mo																
	FY	m																
	FS	MO																

Laboratory ID	EMSL27
Lab Sample Number	271300244-0009

EPA Sample Number BA-00037

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q10	Flo	WO																
	F7	MO										-						
	F8	am																
	F9	M															·	
	Fio	M	<u> </u>												·			
	GI	MD																
	G2	MO																
	63	an																
	64	M																
	65	ND																
	64	W																
	67	W								-								
	Go	an																
	69	an																
	G10	an																

Laboratory ID	EMSL27
•	
Lab Sample Number	271300244-0009

EPA Sample Number	BA-00037
Matrix	Α

Lab QC Type	Not QC
Analyst Name	E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	1.1		Minera	l Class					1 = ye	es, blank	= no	CH Not
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Q10	HI	ND																
	H2	W										<u>.</u>						
	113	Mo					· ·											
	HU	wo	ži -						- 100									
	45	MO								.,								
	HU	WO																
	H1	wo																
	HB	M																
	HA	mo																
	OIH	am																
	I	m																
	J2	m																
	<b>I</b> 3	MD							17.7									
	IY	Mo	5															
	Is	W														_		

Laboratory ID	EMSL27 EPA Sample Num	ber BA-00037	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number 271	1300244-0009 Ma	trix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
QID	I6	NO																
	IJ	an	tu															
	gI	an																
-	Iq	wo																
	IIO	WD																
	Ji	MO																
	J2	Mo				···												
	J3	MO											<u></u>				1511	
	J4	w																
	J5	Mo				-												
	56	Mo																
	57	M						* ***										
	Th	W	-	:														
	Ja	M								· 							·	
	JID	M																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab OC Type Not OC Lab Job Number 271300244
Laboratory ID EWISL21	EFA Sample Number BA-00037	Lab QC Type Not QC Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	l Class	·				1 = v	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R١	Al	ND																
	AZ	ND																
	AZ	m																
	A4	W																
	AS	MO																
	A6	MD																
	A7	av																
	P18	am																
	P19	aw																
	Alo	an				-												
	BI	an	-															
	ßZ	an																
	В3	IVO.				**			·									
	84	NO																
	B5	CU																

Laboratory ID	EMSL27	
•		
Lab Sample Number	271300244-0009	

EPA Sample Number	BA-00037
Matrix	A

Lab QC Type	Not QC	
Analyst Name	E. Wyatt-Pescado	r

Lab Job Number 271300244

Grid Storage Loc. 2713-LiB-56

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	I Class	<del> </del>				1 = 1/4	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
RI	86	WO																
	B7	av																
	BB	100																
	B9	ND																
	BID	av.																
	CI	aVI																
	C2	aul																
	C3	au		<u> </u>														
	CY	avi																
	C5	an																
	Clo	an																
	C7	NO																
	C8	na																
	CA	ממ																
	CID	no																

Laboraton (ID)	EMSL27	EPA Sample Number BA-00037	Lab OC Time		Lab lab Novebou	
Laboratory ID	EWISL2/	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 2	71300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No6.06		<b>.</b>				<b></b>			<u> </u>					·	
Grid	Opening	Type	No. of Str Primary	Total	Length	nsions Width	Identification	LA	OA	I Class CH	NAM	Mineral	EDV4	01tb-(0	1 = y	es, blank Photo	≖ no EDS	CH Not
	0.1	au	Timery	Total	Lengui	WIGHT			L OA	Сп	INAIVI	Desc	EDXA	Sketch/Comments	Skelcii	FIIOLO	EDS	Counted
RI	10																	
	DZ	MO																
	D3	wo	-															
	D4	aw																
	D5	aM																
	DL	aVi																
	74	Mo																
	DB	avı													·			
	D9	am																
	010	an																
	EI	am																
	E2	NO																
	E3	No				A												
	E4	w													:			
	ES	m																

Laboratory ID	EMSL27	EPA Sample Number	BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = 10	es, blank	- no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
RI	Elo	M																
	ET	on																
	E8	DU																
	E9	an				. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,												
	EIO	No		, <u></u>		**************												
	FI	avi																
	FZ	avı																
	F3	an																
	F4	an																
	F5	an																
	F6	an																
	F7	am																
	FB	No															- 1	
	Fa	Mo																
	FID	M	. :				• .											

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions	[ <u>.</u> .		Minera	al Class	•				1 = v	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments				CH Not Counted
RI	GI	ND																
	62	dn							#**····									
	63	w																
	G4	w	·															
	G5	M												,				
	66	an																
	67	avy																
	CB	MD																
	69	W																
	610	NO																
	HI	avi																
	HZ	W																
	НЗ	an																
	44	NO	† -															
	H5	מעז																

EMSL27 EPA Sample Number BA-00037 Lab QC Type 271300244 Not QC Laboratory ID Lab Job Number 271300244-0009 Matrix Α 2713-LIB-56 Lab Sample Number Analyst Name E. Wyatt-Pescador Grid Storage Loc.

	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class					1 = v	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
RI	Ale	NO																
	H7	wo																
	48	ari															*	
	H9	NO				- November 1												
	HID	m												·				
	II	ND																
	I <sub>2</sub>	avi				,												
	I3	an					· ·											
	I4	an												***			747	
	I5	MO										·						
	I6	M												PPP market was to the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of				
	I7	an																
	IB	an																
	I9	an																
	IIO	M																

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

Grid	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	al Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width	ico. is.iioa(joi)	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R3	Al	ND																
	AZ	NO																
	A3	m																
	B4	an																
	A5	NO																
	AL	no																
	A7	an																
	AS	no																
	A9	no															·	
	AID	m																
	BI	w	å. V															
	B2	מעו																
	B3	au																
	B4	w																
	85	ND																

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-000	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	il Class	10 1,1				1 = 1	es, blank	- no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	_CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch			CH Not Counted
R3	Blo	NO																
	B7	an																
	BB	NO																
	B9	NA																
	BID	no																
	CI	No																
	C2	MO																
	C3	an																
	CY	ov																
	C5	no																
	Ch	NO																
	CT	טעו																
	CB	No																
	C9	m																
	CID	1100																

Laboratory ID EMSL2	7 EPA Sample Numbe	er BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244	0009 Matrix	× A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid Structure No.				Dime	nsions			Minara	ıl Class		<u> </u>	<u> </u>				
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	es, blank Photo	CH Not Counted
R3	DI	ND															
	D2	an															
	D3	ND				: :											
	D4	an															
	29	an															
	Dlo	an															
	<b>P7</b>	MD															
	DB	mo	:														
	<b>D9</b>	an	· · · · · · · · · · · · · · · · · · ·														
	סומ	wo															
	El	M															
	EZ	NO						.,									
	E3	M															
	E4	MD															
	E5	WD							÷								

Laboratory ID	EMSL27	EPA Sample Number BA-00037
Lab Sample Number	271300244-0009	Matrix A

Lab QC Type	Not QC	Lab Job Number	271300244
Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R3	Elo	NO																
	E7	avi																
	EB	ND							· · · · · · · · · · · · · · · · · · ·									
	E9	avı																
	EID	MO	:															
	FI	an	*															
	FZ	no																
	F3	an	-							-								
	F4	ND																
	F5	an					·											
	Flo	MD																
	FT	No																
	FB	avi											·					
	F9	NO																
	FIO	MO					-											

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Ctructuro	No of Ch		Dim			T		. 01		T						
Grid	Opening	Structure Type	No. of Str			ensions	Identification			Class		Mineral				es, blank		CH Not
			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
R3	GI	an																
	62	an								****								
	63	an																
	G4	ND																
	65	ND																
	Glo	an																
	67	M																
	G8	m																3
	69	no																
	610	an																
	HI	ND																
	HZ	avr																
	H3	wo																
	44	Wo																
	HS	WD					,											

Laboratory ID	EMSL27	
-		
Lab Sample Number	271300244-0009	

EPA Sample Number BA-00037

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-56

Grid	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	il Class					1 = ye	es, blank	= no	
Gild	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
R3	H6	aw																
	H7	MD	ž,															
	H8	w																
	H9	MO																
	HIO	mo																
	I)	NO																
	T2	Mo					,			,								
	I3	No																
	I4	MO																
	<b>I</b> 5	No																
	Ilo	WO																
	IT	NO																
	IB	WO	; ; ;															
	Iq	M																
	IIO	M																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador	Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = 10	es, blank		
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R3	Ji	MO																
	J2	mo																
	J3	M															<u> </u>	
	J4	Mo																
	03	σW										·						
	Th	an																
	J7	M																
	JB	M																
	<b>19</b>	W0																
	JIO	M)																
R5	Al	ND																
	AZ	W																
	A3	W						-										
	AY	MO																
	AS	M																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC Lab Job Number 2	271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2	713 <b>-</b> LIB-56

	Grid	Structure	No, of Str	uctures	Dime	ensions			Minera	i Class		[			1 = 10	es, blank	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R5	Alo	NO																
	<b>B</b> 7	MO	-						/								-	
	AB	ND	**************************************															
	AG	MO																
	A10	M							~~.									
	BI	mo				-1												
	132	Mo																
	B3	WO																
	<b>B</b> 4	m																
	B5	M															•	
	Bb	Mo																
	B7	M												·				
	B	MO																
	B9	m																
	BIV	ND																

Laboratory ID EMSL27	EPA Sample Number BA-00037	Lab QC Type Not QC Lab Job N	lumber 271300244
Lab Sample Number 271300244-0009	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storag	ge Loc. 2713-L(B-56

	Grid	Structure	No. of Str	ructures	Dime	ensions	LILLE II		Minera	l Class				**************************************	1 = v	es, blank	= no	
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R5	CI	an																
	C2	W																
	C3	$a_{N}$																
	C4	mo																
	C5	Mo	-															
	Cb	MD																
	C7	Mo	-															
	CB	Mo			-													
	Ca	Mo										,						
	CIO	mo																
	DI	MO															<del></del>	
	D2	CM																
	D3	MO																
	DH	CVV																
	P5	M																

Laboratory ID	EMSL27	EPA Sample Number BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	nucturos	Dimo	ensions		1	Minera	i Class			<u> </u>		4			
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	es, blank Photo	= no EDS	CH Not Counted
R5	Do	σN											_					
	D7	MO																
	D8	MO																
	D9	Mo																
	ala	Mo																
	EI	mo																
	EZ	Wo	·															
	E3	mo																
	EU	WO																
	E5	mo																
	Ele	MO																
	E7	mo				:												
	EB	mo																
	Eq	Mo																
	E10	MO															-	

Laboratory ID	EMSL27	EPA Sample Number	BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0009	Matrix	Α	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LI <b>B-</b> 56

	Grid Structure No. of Structures			T T									<u> </u>					
Grid	Grid Opening	Structure Type				ensions	Identification	L		l Class		Mineral				es, blank		CH Not
		''	Primary	Total	Length	Width		LA_	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
R5	FI	MO																
	FZ	MO																
	F3	ND	-															
	FY	Mo				W 477												
	F5	No																
	Flo	Wo																
	FT	no																
	FB	WD																
	Fa	Mo																
	F10	MO																
	61	mo																
	62	m																
	63	m																
	64	MD	i .															
	65	MD																

Laboratory ID E	EMSL27 EPA Sample Numb	per BA-00037	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 2713	00244-0009 Mat	rix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LI <b>B-</b> 56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	≃ no	
Giiu	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
R5	66	ND																
	67	mo																
	68	MO																
	Ga	NO																
	GID	MO																
	HI	W																
	H2	NO																
	H3	MO																,
	H4	MO																
	145	Mo																
	46	MO	-			dans of the second second second second second second second second second second second second second second												
	H7	mo																
	HØ	m				d												
	H9	mo																
	HIO	mo																

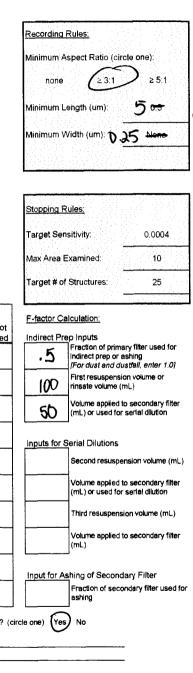
Laborator	y ID:	EMS	L27
Instrumen	t ID	JEOL 100 2	
Voltage (F	(V)	10	0
Mag.	4,80	00 X	HIGH
Grid open (mm2)	ing area	0.0	13
Scale: 1L	.=		
Scale: 10	) =	1	
Primary fi (mm2)	iter area	38	15
Secondar Area (mm		36	io
Category Blank)	(Field,	Fie	eld
Primary fi size (um)	lter pore	0.	8

EPA Sam <b>ple</b> Number:	<b>BA</b> -00038	Tag:	AL1
Matrix (A=Air, D=D Dustfall):	oust, DF =		<b>Y</b>
Air volume (L), dus dustfall container a		8!	90
Date received by	ab	5/21	/2013
Lab Job Number:		2713	00244
Lab Sample Numb	per:	2713002	244-0010
Number of grids p	repared		0
Prepared by		E. Wyatt-	Pescador
Preparation date		4/15	/2009
EPA COC Numbe	r:	0412	2-003
Secondary filter po	ore size (um)	O	.2

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/24/413
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	IA
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-56
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	6

#### F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->



	Grid	ning Type	ructures	Dimer	sions	1-lantification	Min	eral Class	see belov	w)			Sketch/ Comments	1 = y	es, blank	= no		
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/ Comments	Sketch	Photo	EDS	CH Not Counted
52	Al	M																
	A2	NO												J-10-14.				
	A3	NO												#			=-	
	<b>A</b> 4	MD																
	A5	M					<b></b>											
	A6	an																
	A7	WO																
	AB	WD																
	Aq	WD																
	NO	MD																

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:	1.4.1	 			1111	
Analysis date:						
Instrument:		 				

Grid opening traverse	direction (	circle	one
-----------------------	-------------	--------	-----

Horizontal V Vertical

SUPPLEMENTAL AIR ANALYSIS:

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00038 271300244 Not QC Lab Job Number Lab Sample Number 271300244-0010 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Structure	No. of Str	ructures	Dime	nsions			Miners	ıl Class					1 - 1/2	es, blank	- no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
52	ВІ	αИ							·								· · · · ·	
	B2	OW																
	B3	σW																
	184	an																
	135	Wo																
	B6	aVr																
	B7	11/0																
	BB	aw																
	B9	aw																
	B10	NO																
	CI	ND																
	CZ	ND																
	03	ND																
	CY	ND																
	CS	ND				·												

Laboratory ID	EMSL27	EPA Sample Numb <b>e</b> r	BA-00038	Lab QC Type		Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0010	Matrix	A	Analyst Name	Ę.	. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

	Grid	St	N 6 04															
Grid	Opening	Structure Type	No. of Str Primary	Total	Length	ensions Width	- Identification	LA	Minera OA	Class CH	NAM	Mineral	EDVA	Skatah (Camana = t-	1 = ye	es, blank		CH Not
^-	Clo	MN	Timary	Iotai	Lengun	VVIGUT		LA	, OA	Сп	NAIVI	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
92		MO															:	
	<u>C7</u>																	
	CB	MO																
	<u>c9</u>	w																
	CIO	WO																
	01	MO																
	102	MO				- 1												
	D3	an								,72,5								
	04	an																
	05	an						-	,					7.74				
	06	1/10																
	דמ	NO																
	08	No				***************************************												
	Na	aw																
	VIQ.	MD																

EPA Sample Number Lab QC Type EMSL27 BA-00038 Laboratory ID Not QC Lab Job Number 271300244 Analyst Name Lab Sample Number 271300244-0010 Matrix Α E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	I Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
52	EI	ИО																
	E2	an																
	E3	NO																
	EY	WO																
	E5	MD				1.0												
	Elo	ND																
	E7	aw											411.0					
	E8	MO																
	Eq	WD																
	EID	1/0									·							
	FI	W																
	FZ	MD																
	F3	Mo																
	FY	M																
	F5	Mo																

Laboratory ID EMSL27 EPA Sample Number BA-00038 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0010 Matrix Α Analyst Name Grid Storage Loc 2713-LIB-56 E. Wyatt-Pescador

	Τ					' L							att-Pescador	_ Gild 5t0i	age Loc.	2/13	-LIB-30	
Grid	Grid Opening	Structure	No. of Str	ructures	Dime	nsions	dentification		Minera	al Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
\$2	F6	MO																Counted
	F1	av																
	F%	MD																
	Fq	M															-	
	FIO	NO.																
	Gl	NO																
	62	ND																
	63	no																
	G4	an																
	G5	<i>o</i> M				_												
	66	NO																
	67	NO																
	G8	OW																
	G9	MO																
	G10	avi a																

Laboratory ID EMSL27 EPA Sample Number BA-00038 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0010 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56

							Γ					l			] 0114 0101			T
Grid	Grid Opening	Structure Type	No. of Sti	ructures	Dime	ensions	Identification		Minera	I Class	1	Mineral			1 = y	es, blank	= no	
	- F	.,,,,,	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
52	H	NO																
	H2	au																
	H3	aun																
	H4	ND															<del></del>	
	115	NO																
	46	aur								-								
	H7	avi																
	H8	NO															-	
	Hq	1/0															<del></del>	
	HID	an																
	エリ	an																
	I2	No																
	I3	No																
	ΣY	ND																
	I5	m		,,,,								-						

Laboratory ID	EMSL27	EPA Sample Number BA-00038	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number	271300244-0010	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-56

Grid	Grid Opening	Structure Type	No. of Structures		Dimensions		Identification	Mineral Class							1 = yes, blank = no			
			Primary	Total	Length		idenuncation	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
\$2	IO	ND																
	I7	M																
	I8	MO																
	I9	MD																
	IIO	ND																
	JI	1VD																
	JZ	MD																
	J3	an																
	J4	no								i								
	J5	NO																
	16	NO																
	59	NO																
	J8	ON																
	J9	MO																
	JID	M																

Laboratory ID EPA Sample Number EMSL27 BA-00038 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0010 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures.	Dime	ensions			Minora	il Class				<u> </u>	1	es, blank		
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
54	Al	aw																
	A2	au																
	A3	an																
	A4	ND																
	A5	an																
	Alo	an																
	A7	ND																
	198	NO																
	PA	an																
	DIA	au																
	βΙ	ND																
	B2	an																
	B3	מטו																
	BY	an																
	<b>B</b> 5	ND																

Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00038 Not QC Lab Job Number 271300244 271300244-0010 Matrix Lab Sample Number Analyst Name Grid Storage Loc. 2713-LIB-56 Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	ruoturaa	Dimo	ensions			Minera	l Class					1 = 14	es, blank		
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
54	86	ND																
	87	avv																
	BB	M																
	139	1/0																
	BIO	NO																
	CI	avv																
	CZ	MD																
	C3	NO																
	C4	an																
	CS	WO																
	Clo	aw																
	CT	WO																
	CB	γvŋ																
	Ca	11/0													, ,,_			
	CIO	NO											_					

271300244 BA-00038 Lab QC Type Not QC Lab Job Number EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
SH	ľ	an																
	02	WO																
	03	W																
	104	No																
	05	om																
	Na	MO																
	07	Mo																
	08	MO																
	100	wo														_		
	010	avi																
	EI	ow						ļ										
	EZ	Mo														_		
	E3	MD																
	Ey	gm														_		
	ES	W)											<u> </u>					

271300244 BA-00038 Lab QC Type Not QC Lab Job Number EPA Sample Number EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
54	Ele	NO																
	E7	MD																
	EB	ND																
	Eq	MO																
	ED	MO																
	FI	MO																
	F2	mo													_			
	F3	MO																
	FY	NO																
	F5	Mo																
	F6	aw																
	FI	m																
	FB	MO																
	FO	MD																
	FIO	Mo																

271300244 Lab QC Type Not QC Lab Job Number BA-00038 EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
ध	G	DN																
	62	aw																
	63	MD																
	W	NO																
	65	No															-	
	66	MD																
	67	Mo														_		
	68	an																
	69	mo														_		
	610	an																
	HI	MO																
	112	MO																
	113	m																
	44	MD																
	H5	m																

271300244 BA-00038 Lab QC Type Not QC Lab Job Number EPA Sample Number Laboratory ID EMSL27 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	al Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	dentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
54	He	an																
	11	ND																
	48	NO					_										_	
	H9	MD																<u></u>
	HIO	an														_		
	I)	W											-					
	I2	MO																
	I3	w																
	I4	NO																
	I5	W																
	几	WO																
	IT	WO																
	I8	NO																
	Iq	an									-							
	TIO	MP																

Laboratory ID EMSL27 Lab Sample Number 271300244-0010

BA-00038 **EPA Sample Number** Matrix Α

Lab QC Type Not QC Analyst Name E. Wyatt-Pescador

271300244 Lab Job Number Grid Storage Loc.

2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
54	JI	NO															-	
	JZ	WO								_								
	<b>J</b> 3	ND																
	54	WO																
	J5	ND																
	10	MO																
	51	MO																
	B	ND																
	Ja	NO														_		
	SID	mo																
SG	A)	ND														_		
	A2	ND																
	A3	ND																
	RY	ND																
	A5	an																

Lab Job Number 271300244 BA-00038 Lab QC Type Not QC EPA Sample Number Laboratory ID EMSL27 2713-LIB-56 Grid Storage Loc. Analyst Name Matrix Lab Sample Number 271300244-0010 Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions	14464		Minera	ıl Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
એટ	PIG	WO																
	A7	aw																
	AB	an																
	Aq	aw																
	A10	mo																
	BI	NO																
	BZ	NO					_											
	B3	aw																
	Вч	Wo																
	<b>B</b> S	aw																
	86	MO																
	137	Mp																
	BB	mo																
	Ba	mo			i.													
	BID	m																

271300244 BA-00038 Lab QC Type Not QC Lab Job Number EMSL27 EPA Sample Number Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Idealic alies		Minera	l Class			-		1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
56	CI	an															-	
	CZ	avi																
	C3	WD																
	64	110																
	CS	NO																
	Clo	MO																
	.01	Mo								_								
	CB	an																
	ca	W																
	CID	MO																
	Di	m																
	02	No														_		
	03	aM																
	D4	MD																
	<b>Q</b> 5	mo																

271300244 Lab QC Type Not QC Lab Job Number EPA Sample Number BA-00038 Laboratory ID EMSL27 Grid Storage Loc. 2713-LIB-56 271300244-0010 Matrix Α Analyst Name E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
SG	00	NO																
	07	an																
	0%	_ QW																
	DN	W																
	DID	ND															-	
	EI	No					_											
	£2	_aw_																
	E3	MD		,														
	E4	W																
	ES	M										,						
	Elo	WD																
	ET	ON																
	EB	MD					_											
	Eq	σM																
	E10	W																

271300244 BA-00038 Lab QC Type Not QC Lab Job Number EMSL27 EPA Sample Number Laboratory ID Grid Storage Loc. 2713-LIB-56 E. Wyatt-Pescador 271300244-0010 Matrix Α Analyst Name Lab Sample Number

0-1-1	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
So	FI	ND																
	F2	m															····	
	F3	MO															_	
	F4	110																
	PS	m																
	Flo	m																
	F7	MO																
	FB	Mo																
	F9	MD																
	F10	an																
	GI	NO																
	62	MO														_		
	G3	CM																
	G4	Mo																
2	65	ND																

271300244 Lab QC Type EPA Sample Number BA-00038 Not QC Lab Job Number EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. Analyst Name 271300244-0010 Matrix Lab Sample Number Α E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
56	66	au															· · · · · · · · · · · · · · · · · · ·	
	G7	an				4. 4.												
	68	Mo															. · · .	
	69	MO										,						
	610	MO												, , , , , , , , , , , , , , , , , , ,			······································	
	HI	m															-	
	H2	Wo																
	H3	mo																
	H4	Mo																
	45	Mo																
	46	Mp																
	47	17/0																
	НВ	WO					_											
	Hq	αVI																
	HID	WD																

Laboratory ID	EMSL27
Lab Sample Number	271300244-0010

	11.7	12.50	717	-	_	
<b>EPA Sample Number</b>		В	A-0	0038		
			11.1			
Matrix	500		- 4	<b>\</b>		

Lab QC Type	Not QC	
Analyst Name		
Allalyst Name	E vvyau-rescaudi	

Lab Job Number	271300244
 Grid Storage Loc.	2713-LIB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Sto	II	NO																
	I2	WO																
	I3	MD																
	I4	WO										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
	I5	NO																
	Ib	Mb																
	巧	m																
	I8	MO																
	I9	M																
	II0	m																
	SI	om																
	JZ	OM																
	J3	Mo																
	54	mo																
	15	w					_											

271300244 EPA Sample Number BA-00038 Lab QC Type Not QC Lab Job Number EMSL27 Laboratory ID 2713-LIB-56 Grid Storage Loc. 271300244-0010 Matrix Analyst Name E. Wyatt-Pescador Lab Sample Number Α

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
56	56	an																
	51	ND																
	18	an																
	J9	NO																
	510	$\alpha$																
58	Al	an																
	P2	an																
	Piz	NO																
	A4	an																
	AS	WD																
	AV	WO																
	p1	Mo																
	<b>A8</b>	W																
	Aq	MD																
	<b>MIO</b>	W																

271300244 EPA Sample Number BA-00038 Lab QC Type Not QC Lab Job Number Laboratory ID EMSL27 Lab Sample Number Matrix Grid Storage Loc. 2713-LIB-56 271300244-0010 Α Analyst Name E. Wyatt-Pescador

,	<del>,</del>													T	1			
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	- Identification		Minera	Class					1 = ye	es, blank	= no	
Gila	Opening	Туре	Primary	Total	Length	Width	(deltanodio)	LA	OA	СН	NAM	Mineral Desc	EDXA	A Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
58	ВІ	ND															<u>.</u>	
	Bz	W																
	B3	m																
	<b>B</b> 4	m																
	BS	m																
	BL	m															<b>.</b>	
	B7	m																
	BB	W																
	Ba	W										100-100						
	BID	M							_									
		22	10															
			6/2	5/4														
				403														

Mineral Class (see below)

OA

СН

NAM

Laborator	y ID:	EMSL27					
Instrumer	nt ID	JEOL 100 CX II (27- 2)					
Voltage (l	KV)	100					
Mag.	4,8	HIGH LOW					
Grid oper (mm2)	ning area	0.013					
Scale: 1	_ =	1					
Scale: 1	D =						
Primary f (mm2)	ilter area	385					
Seconda Area (mr		360					
Category Blank)	(Field,	Field					
Primary size (um	filter pore	0.8					

Grid

Opening

A2

A6

Bl

BJ

Grid

Structure

Type

W

W

<u>w</u>0

ND

EPA Sample Number:	BA-00047	Tag:	AL1				
Matrix (A=Air, D=D Dustfall):		Α					
Air volume (L), dus dustfall container a		1154					
Date received by l	5/	21/2013					
Lab Job Number:	271300244						
Lab Sample Numb	271300244-0011						
Number of grids p	repared		10				
Prepared by		D. Barney					
Preparation date	4115104						
EPA COC Numbe	0412-003						
Secondary filter p	0.2						

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/24/2013
Method (D=Direct, l=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-57
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	5

#### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

ecording Rules:	
/inimum Aspect Ratio (circle one):	
none	
Minimum Length (um): 5 <del>0.5</del>	ms Till
Minimum Width (um): D. 35	J1111

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

Indirect Prep Inputs
Fraction of primary filter used for indirect prep or asking
[For dust and dustfall, enter 1.0]
First resuspension volume or rinsste volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:

ne) (Tes)	NO	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Width

Length

Analyzed by:	€.5WP	<del>,</del>	7.2	- 1			
Analysis date:	7/1	13					
Instrument:	1.	1-2	,			 <u> </u>	

Grid opening traverse	direction (circle one):
the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	

V Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = ves. blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Laboratory ID EMSI	L27 EPA Sample Num	ber BA-00047	Lab QC Type	Not QC	Lab Job Number	271300244
Lab Sample Number 27130024		ıtrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-57

	Grid	Structure	No. of Structures Dimensions				Minera	l Class					1 = ye	es, blank	= no		
Grid	Opening	Туре	Primary	Total	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	CZ	aN															
	СЧ	NO															
	Cb	ND															
	C8	ND															
	CID	ND															
	DI	พง															
	<i>D</i> 3	MO															
	20	an															
	07	an															
	09	MO															
	EZ	aw															_
	EY	aw															
	Elo	WO				_											
	€8	OW.								ļ				_			
	EID	an															

Laboratory ID	EMSL27	EPA Sample Number BA-00047	Lab QC Type Not QC Lab Job Number	271300244
Lab Sample Number	271300244-0011	Matrix A	Analyst Name <u>E. Wyatt-Pescador</u> Grid Storage Loc.	2713-LIB-57

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
Al	FI	ND																
	F3	ND																
	F5	NO																
	F7	WD																
	F9	NO																
A3	01	NO																
	D3	ND													ļ			
	20	au																
	רס	W																
	09	an																
	EZ	an																<u> </u>
	<b>E</b> 4	aw																
	Eb	an a									-							-
	E8	an																
	EIO	ND																

 Laboratory ID
 EMSL27

 Lab Sample Number
 271300244-0011

EPA Sample Number BA-00047

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-57

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = ye	es, blank	= no	011 11-4
Grid	Opening	Туре	Primary	Total	Length	Width	dentinication	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	FI	ам															<del></del>	
	F3	av																
	F5	aw																
	F7	No																
	F9	WD																
	GZ	Wo																
	64	aw																
	Glo	NO																
	68	aw														<del></del>		
	610	WO										ļ						
	HI	au																
	НЗ	ND																
	45	UVD.														_		
	H7	MD																
	49	an																

271300244 EPA Sample Number BA-00047 Lab QC Type Lab Job Number Laboratory ID EMSL27 Not QC 271300244-0011 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 Lab Sample Number E. Wyatt-Pescador

							T											
Grid	Grid Opening	Structure Type	No. of Str			nsions	Identification		Minera			Mineral				es, blank		CH Not
	'		Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
A3	I2	au																
	<b>I</b> 4	an																
	IL	MD															_	
	IB	NO																
	I)D	mo																
A5	DZ	an																
	<b>4</b>	an																
	O.	M																
	DB	MO																
	Dlo	an																
			ध्य	P.														
				1/	1/2013													
						/												

Mineral Class (see below)

СН

NAM

OA

	,
Laboratory ID:	EMSL27
instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag. 4,80	00 X HIGH
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8

Grid

Opening

**R2** 

A4

Ab

A8

AID

**B**3

Grid

Structure

Type

NO

W

ND

NO

NO

EPA Sample Number:	BA-00048	Tag:	AL1	
Matrix (A=Air, D=E Dustfall):	Dust, DF =			
Air volume (L), du dustfall container i			1165	
Date received by I	lab	5/	21/2013	
Lab Job Number:		27	1300244	
Lab Sample Numl	ber:	27130		
Number of grids p	prepared		10	
Prepared by		D	Barney	
Preparation date		4	19104	ms 71111
EPA COC Numbe	er:	0	412-003	
Secondary filter p	ore size (um)		0.2	

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/24/203
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-57
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	6

#### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

Indirect Prep Inputs

CH Not

Counted

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filte (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter

(mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:

(		

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Primary

Total

Dimensions

Length

Width

Analyzed by: Analysis date: Instrument: 25MP 71/10/3 21-1

Grid opening traverse direction (circle one)	):
() ()-d-a-dal	

H Horizon Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = ves. blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

271300244 BA-00048 Lab QC Type Not QC Lab Job Number EPA Sample Number Laboratory ID EMSL27 2713-LIB-57 Grid Storage Loc. Analyst Name 271300244-0012 Matrix Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	02	au																
	<b>P4</b>	aw																
	06	ND																
	08	ND																
	DID	ND																
	EI	W																
	€3	ND																
	Es	NO			3													
	E7	an																
	Eq	NO																
	F2	an																
	FY	NO																
	Flo	OM																
	FB	an																
	FIO	W																

 Laboratory ID
 EMSL27

 Lab Sample Number
 271300244-0012

EPA Sample Number BA-00048

Matrix A

 Lab QC Type
 Not QC

 Analyst Name
 E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-57

0-:1	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	6	ŊD																
	63	avr																
	GS	an																
	67	NO																
	69	aw																
C3	CI	an																
	C3	aN															_	
	C5	WO																
	C7	W																
	ca	m																
	02	M <sub>U</sub>																
	D4	ND																
	00	WO																
	80	wo																
	DID	MO																

 Laboratory ID
 EMSL27

 Lab Sample Number
 271300244-0012

EPA Sample Number BA-00048

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-57

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
Gna	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
(3	FI	NO																
	F3	an								_				7.44				
	F5	an																
	F1	MO															_	
	FA	ND																
	62	av																
	G4	aw																
	60	m																
	68	an																
	610	Wo																
	HI	ND																
	H3	an																
	HS	an																
	H7	MD																
	Ha	Mo																

271300244 BA-00048 Lab QC Type Lab Job Number EMSL27 EPA Sample Number Not QC Laboratory ID 2713-LIB-57 Lab Sample Number 271300244-0012 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc.

			· · · · · · · · · · · · · · · · · · ·				T							<u> </u>				
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	τ				1 = ye	es, blank	= no	CUNA
	Opening	Туре	Primary	Total	Length	Width	Taominoanon	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C3	J2	ND													,			
	<b>J4</b>	an																
	Tle	an																
	JB	MD																
	J10	an																
C5	GZ	M																
	64	NA																
	Gb	ממ																
	68	MO																
	GID	an																
		50																
		THE	7/1/2															
			12	13														

Mineral Class (see below)

OA

СН

NAM

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag.	4,800 X HIGH
Grid opening are (mm2)	ea 0.013
Scale: 1L =	1
Scale: 1D=	1
Primary filter are (mm2)	ea 385
Secondary Filte Area (mm2)	r 360
Category (Field Blank)	Field
Primary filter po size (um)	ore 0.8

Structure

Type

ND

NO

<u>NO</u> NO

Grid

Opening

**A2** 

Alb

Grid

EI

No. of Structures

Total

Primary

Dimensions

Length | Width

EPA Sample Number:	BA-00058	Tag:	AL1
Matrix (A=Air, D=D Dustfall):	oust, DF =		Α
Air volume (L), dus dustfall container a	st area (cm2), or area (cm2)		510
Date received by I	<b>a</b> b	5/2	21/2013
Lab Job Number:		27	1300244
Lab Sample Numl	per:	27130	0244-0013
Number of grids p	repared		10
Prepared by		D.	Barney
Preparation date	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	â	12104
EPA COC Number	er:	04	112-003
Secondary filter p	ore size (um)		0.2

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/24/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM- ASTM)	TEM-ISO
Grid storage location	2713-LIB-57
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	7

#### F-Factor Calculation (Indirect Preps Only):

**EDXA** 

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio (circle one):	
none	1
Minimum Length (um): 5 +5	ms 7111/13
Minimum Width (um): 0.35 None	711113

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

Indire	ct Prep Inputs  Fraction of primary filter used for indirect prep or ashing  (For dust and dustfall, enter 1.0)
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filte (mL) or used for serial dilution

L	
Inputs for	Serial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

AID

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) (ves) No if No, explain:


Grid opening traverse direction (circle one):

H Horizontal
Vertical

24

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:
Analysis date:
Instrument:

11115 27-2 SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

271300244 Lab Job Number Not QC EMSL27 EPA Sample Number BA-00058 Lab QC Type Laboratory ID 2713-LIB-57 Grid Storage Loc. Analyst Name Matrix E. Wyatt-Pescador 271300244-0013 Lab Sample Number Α

	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class					1 = yes, blank = no		= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
EI	BI	MO																
	BZ	MP																
	<b>B</b> 3	W																
	B4	M																
	<b>B</b> 5	ND																
	BU	dγ																
	137	MD																
	80	MO																
	B9	an																
	BID	dM																
	Cl	NO																
	C2	M																
	<b>C3</b>	w																
	CY	MD																
	C5	gh																

Laboratory ID EMSL27

Lab Sample Number 271300244-0013

EPA Sample Number BA-00058

Matrix A

Lab QC Type Not QC

Analyst Name E. Wyatt-Pescador

 Lab Job Number
 271300244

 Grid Storage Loc.
 2713-LIB-57

	Grid Grid	Structure	No. of Structures		Dimensions		Identification	Mineral Class						1 = yes, blank = no			CH Not	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not
EI	CU	an																
	C7	MD																
	CG.	wo																
	C9	am																
	CIO	m																
	01	MD																
	02	mo																
	03	MO																
	04	MO														_		
	05	MD																
	Ja	MO																
	07	MO																
	90	M																
	DQ	m																
	DIO	MO																

271300244 Lab Job Number Lab QC Type Not QC EPA Sample Number BA-00058 EMSL27 Laboratory ID 2713-LIB-57 Grid Storage Loc. Analyst Name Matrix E. Wyatt-Pescador Α 271300244-0013 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
EI	El	W																
	EZ	ΝO																
	<i>E</i> 3	M																
	E4	M																
	E5	M														11.11		
	E6	NO																
	E7	an																
	E8	m																
	Eq	MD																
	EID	MO													ļ			
	FI	MO																
	FZ	Mo																
	F3	m																
	F4	m																
	FS	m									<u></u>							

Laboratory ID	EMSL27
•	
Lab Sample Number	271300244-0013

EPA Sample Number	BA-00058	
Matrix	Α	

Lab QC Type	Not QC	
Analyst Name	E. Wyatt-Pescador	

1	
Lab Job Number	271300244
1	
Grid Storage Loc.	2713-LIB-57

	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	l Class		,			1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
EI	Flo	ND																
	F7	NO																
	FB	an																
	Fg	M																
	FID	M																
	GI	MO																
	62	MO																
	G3	NO																
	64	MO																
	65	an																
	66	MO									ļ							
	GI	m																
	68	MO																
	69	NO						ļ										
	GD	NO											<u></u>					

Laboratory ID EMSL27 Lab QC Type EPA Sample Number BA-00058 Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0013 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 E. Wyatt-Pescador

	Grid	Structure	No. of Str	n of uroo	Dime	ensions			Minor					<u> </u>	4 - 11	an blank	
Grid	Opening	Type	Primary	Total	Length		Identification	LA	OA	Class	NAM	Mineral Desc	EDXA	Sketch/Comments		es, blank Photo	CH Not Counted
E3	A)	ND															
	AZ	NO															
	A3	NO															
	A4	NO															
	A5	ND															
	Alo	NO															
	A7	w															
	A9	ND															
	Aq	ND															
	AID	W															
	BI	IND															
	BZ	WO												,			
	ВЗ	Mo															
	вч	MO															
	BS	W															

271300244 Lab Job Number Not QC EPA Sample Number BA-00058 Lab QC Type EMSL27 Laboratory ID 2713-LIB-57 Grid Storage Loc. Analyst Name E Wyatt-Pescador Matrix Α 271300244-0013 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class	•	· ·			1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary			Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
E3	Blo	No																
	87	NO						-										
	BB	ND																
	B9	NO																
	810	NO																
	CI	1/10																
	CZ	av																
	C3	No																
	C4	W																
	<b>C</b> 5	ND														ļ		
	C6	NO																-
	C7	NO																
	C&	an																
	Ca	an													2			
	CIO	an																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00058
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0013
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-57

	Crid	Churchin	Ni -5 Ct-		Dime				N dim a ma		-				1 - 1	es, blank	- no	
Grid	Grid Opening	Structure Type	No. of Str Primary	Total	Length	ensions Width	Identification	LA	OA	I Class CH	NAM	Mineral Desc	FDXA	Sketch/Comments	Sketch			CH Not Counted
20		MO	rimary	1 Otar	Lengui	VVICEI		<u> </u>	- 02	On	IVAIVI	Desc	LDAA	SKELOTI CONTAINENTS	O. O. O. O. O. O. O. O. O. O. O. O. O. O			Courted
E3	01																	
	D2	NO							-									
	20	m	•															
	40	No																
	20	m																
	DU	Mo																
	07	m																
	<b>8</b> a	m													<u> </u>			
	pa	mo																
	ola	m																
	EI	Mo																
	EZ	σN																
	E3	OW																
	E4	Mo																
	E5	M																

Laboratory ID EMSL27 EPA Sample Number BA-00058 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0013 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-57

Grid	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	l Class					1 = ye	es, blank	= no	
Ollu	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
E3	EU	ND																
	E1	Mo																
	E8	MO																
	E9	w																
	EID	MO																
	FI	WO																
	FZ	MD																
	F3	wo												-				
	FY	avi		-														
	FS	NO																
	Flo	MO		`														
	F7	IND																
	F8	av																
	Fq	øИ																
	FIO	M																

271300244 Lab Job Number EPA Sample Number BA-00058 Lab QC Type Not QC Laboratory ID EMSL27 2713-LIB-57 Grid Storage Loc. Analyst Name Matrix E. Wyatt-Pescador 271300244-0013 Lab Sample Number Α

	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	al Class					1 = y	es, blank	= no	CH Not
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	
E3	61	ND																-
	62	ND																
	63	ND																
	G4	ND																
	65	מעו																
	Glo	an											-					
	67	avi																
	68	ND																
	G9	m																
	610	WD									<u> </u>							_
		£77																
		3n	6/24	,														
			6/24	1201	3													

EPA Sample Number Lab QC Type 271300244 Laboratory ID EMSL27 BA-00058 Not QC Lab Job Number 271300244-0013 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 Lab Sample Number E. Wyatt-Pescador

	C=:4	Characteria	No of Ch							1.01			<u> </u>		4		
Grid	Grid Opening	Structure Type	No. of Str Primary	Total		ensions Width	Identification	LA	OA	l Class CH	NAM	Mineral Desc	EDXA	Sketch/Comments		es, blank Photo	CH Not Counted
<u>5</u> 5	82	av															
	84	wo															
	BG	an															
	88	MO															
	BID	Mo															
	C1	Mo															
			Edig														
				11/20													
					2												

Mineral Class (see below)

OA

CH

NAM

Laboratory	/ ID:	EMSL27						
Instrument ID		JEOL 100 CX II (27- 2)						
Voltage (KV)		100						
Mag 4,80		00 X FIGH						
Grid opening area (mm2)		0.013						
Scale: 1L =								
Scale: 1D =								
Primary filter area (mm2)		385						
Secondary Filter Area (mm2)		360						
Category (Field, Blank)		Field						
Primary fi size (um)		8.0						

Grid

Opening

R3

CA

Grid

61

Structure

Type

W

avr

DM

DN

MD

EPA Sample Number:	<b>BA-0005</b> 9	Tag:	AL1				
Matrix (A=Air, D= Dustfall):	=Dust, DF =	Α					
Air volume (L), d dustfall containe		501					
Date received by	y lab	5/21/2013					
Lab Job Number	r:	271300244					
Lab Sample Nur	mber:	271300244-0014					
Number of grids	prepared	10					
Prepared by		D. Barney					
Preparation date	•	415/69					
EPA COC Numl	ber:	0412-003					
Secondary filter	pore size (um)		0.2				

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/24/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-57
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	2

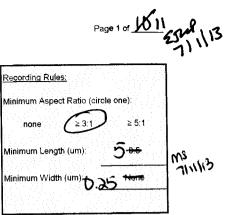
### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Enter data in appropriate cells provided to the right---->

Sketch/ Comments



Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

**ED**S

Indired	et Prep Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filts (mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter

Input for As	hing of Secondary Filter
	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one)

,	NO	

S	If sample was analyzed by more than one analyst or across multiple analysis dates, enter
л	Il Sample was analyzed by filore than one analyst of account
S	analysis details below.

No. of Structures

Total

Primary

Dimensions.

Width

Length

Analyzed by: Analysis date: Instrument:

9.AVR			
Th	113		
'2.	コーレ	L	<u></u>

Grid ope	ening traverse o	direction	(circle	one):
н	Horizontal			

Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

271300244 Lab Job Number EPA Sample Number BA-00059 Lab QC Type Not QC Laboratory ID EMSL27 2713-LIB-57 Grid Storage Loc. Analyst Name Matrix E. Wyatt-Pescador Lab Sample Number 271300244-0014 Α

01	Grid	Structure	Structure No. of Struc	tructures Dimensions		Identification		Minera	Class					1 = y	es, blank	= ho		
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
GI	Cl	NO																
	CI	WD																
	C3	WD																
	C4	an																
	C5	ND																
	CO	<i>a</i> W																
	CT	ΝD																
	CB	NO																
	Ca	MD																
	CIO	MO		A. C.														
	10	ND																
	02	an																
	D3	ND																
	DY	W													ļ			
	05	MD																

Lab QC Type Lab Job Number 271300244 EPA Sample Number BA-00059 Not QC Laboratory ID EMSL27 Matrix Analyst Name Grid Storage Loc. 2713-LIB-57 Lab Sample Number 271300244-0014 Α E. Wyatt-Pescador

	0-14	St	N604-		D:				Minora	I Class					1 = 1	es, blank	- no	
Grid	Grid Opening	Structure Type	No. of Str Primary	Total		nsions Width	- Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments				CH Not Counted
61	DV	MD																
	07	WO																
	00	Mo																
	Da	WO																
	010	ow																
	EI	ND																
	E2	an																
	E3	ND																
	EY	avı																
	E5	avı																
	EU	σVr																
	E7	ND																
	EB	M																
	Eq	W																
	EID	WD																

271300244 Lab QC Type Lab Job Number EPA Sample Number BA-00059 Not QC EMSL27 Laboratory ID Grid Storage Loc. 2713-LIB-57 Analyst Name Matrix Α E. Wyatt-Pescador Lab Sample Number 271300244-0014

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo_	EDS	CH Not Counted
GI	FI	aN																
	F2	NO																
	F3	m														_		
	F4	MD																
	F5	an																
	FU	MO																
	F1	NO.																
	F8	WO									ļ							
	Fa	W																
	FIO	NO																
	61	ND																
	62	MD																
	63	WD																
	64	MD																
N	७५	W																

Lab QC Type 271300244 **EPA Sample Number** BA-00059 Not QC Lab Job Number Laboratory ID EMSL27 2713-LIB-57 271300244-0014 Matrix Α Analyst Name Grid Storage Loc. Lab Sample Number E Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions	1-14:6:4:		Minera	il Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	- Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
GI	Glo	MO																
	67	ND																
	68	dN								,								
	69	Wo																
	GID	NO																
	HI	aW																
	H2	ND												-4-50-4-07-50-4-4-1				
	H3	WO																
	НЧ	ND																
	H5	aw																
	Ho	an																
	H7	m																
	HB	NO																
	Ha	ηD																-
	HIO	an		:														

BA-00059 Lab QC Type 271300244 EMSL27 EPA Sample Number Lab Job Number Not QC Laboratory ID 2713-LIB-57 Lab Sample Number 271300244-0014 Matrix Α Analyst Name E Wyatt-Pescador Grid Storage Loc.

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	al Class					1 = v	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
<b>63</b>	CI	ND																
	Cz	aw																
	C3	MO																
	СЧ	ND																
	c5	ND												·				
	Clo	ND																
	C7	an																
	UB	MD																
	Ca	aw																
	C)D	ND																
	DI	DN																
	Dr	avi			i													
	03	DM																
	04	NO																
	DS	MD																

Laboratory ID EMSL27 EPA Sample Number BA-00059 Lab QC Type Not QC Lab Job Number 271300244 271300244-0014 Lab Sample Number Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 E Wyatt-Pescador

0.11	Grid	Structure	No. of Str	ructures	Dime	ensions			Minera	ıl Class					1 = v	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	ĻΑ	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
63	DG	ND																
	07	aN																
	08	ND																
	D9	aN																
	ora	an																
	E١	ND																
	٤z	avi																
	E3	NO												·				
	EY	σn																
	ES	NO																
	EU	an																
	E7	aW																
	ES	ND					·	-										
	Ed	ND																
	EIO	NO																

Laboratory ID EMSL27 EPA Sample Number BA-00059 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0014 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 E Wyatt-Pescador

	Grid	Structure	No. of Str	ructuree	Dime	ensions			Minora	l Class	***************************************	· · · · · · · · · · · · · · · · · · ·			1-4	es, blank		
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral Desc	FDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
63	F1	ND										3333						Joannea
	FZ	aw																
	F3	ND																
	FY	NO																
	FS	aw																
	F6	ND																
	F7	ND																
	FB	No											:					
	F9	avr																
	FIO	No												·				
	GI	ND																
	62	ND																
and the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of th	63	an							-									
	64	MD																
	65	M					,											

	LIBBY TEM Asbestos Structure Count_Air-Di	oustEDD_38f	P <b>age <u>م</u> of</b>	10 11 25MR 11/13
Laboratory ID EMSL27  Lab Sample Number 271300244-0014	EPA Sample Number BA-00059  Matrix A	Lab QC Type Not QC  Analyst Name E Wyatt-Pescador	Lab Job Number	271300244 2713-LIB-57

	Grid	Structure	No. of Str		Dima	ensions			Minan	l Olana								
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	I Class CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	es, blank Photo	= no EDS	CH Not Counted
63	GG	ND																
	67	ND																
	68	an			-													
	69	ην																
	610	an																
	HI	aw																
	H2	M																
	H3	ΝO																
	Hy	Mo																
	H5	NO												:				
	HG	no																
	H7	MD																
The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	HB	MO																
	HQ	MO																
	dip	M																

Laboratory ID EMSL27 EPA Sample Number BA-00059 Lab QC Type 271300244 Not QC Lab Job Number 271300244-0014 Lab Sample Number Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-57 E Wyatt-Pescador

			<del> </del>						V						<u> </u>			
Grid	Grid Opening	Structure Type	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	<u> </u>	Mineral			1 = y	es, blank	= no	CH Not
		- ,,,-	Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
63	TI	an				-												
	I2	an						·										
	I3	an																
	I4	avı															_	
	IS	OW																
	I6	ND																
	I7	an																
	I8	an																
	Iq	an.																
	I10	an																
		T.	2															
				4/														

Laboratory ID EMSL27 EPA Sample Number BA-00059 Lab QC Type Not QC Lab Job Number 271300244 Lab Sample Number 271300244-0014 Matrix Α Grid Storage Loc. 2713-LIB-57 Analyst Name E. Wyatt-Pescador

	Grid	Structure	No. of St	ructures	Dime	ensions			Minera	I Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments			EDS	CH Not Counted
65	Al	MO																
	P13	MO																
	A6	w																
	m	wo																
	ng	mo																
-	82	mo																
	вч	m																
A	BG	m															·	
				Esz	۰ ـ .													
						2013												
						,												

Mineral Class (see below)

CH

OA



Laborator	y ID:	EMSL27
Instrumer	it ID	JEOL 100 CX II (27- 2)
Voltage (	<b>(V)</b>	100
Mag.	4,80	00 X LOW
Grid oper (mm2)	ning area	0.013
Scale: 1L	. =	<b>1</b>
Scale: 10	) =	
Primary fi (mm2)	lter area	385
Secondar Area (mm		360
Category Blank)	(Field,	Blank
Primary fi size (um)		0.8

Grid

Opening

Grid

Structure

Type

M

EPA Sample Number:	LQ-00001	Tag:	AL1		
Matrix (A=Air, D= Dustfall):	Dust, DF =		А		
Air volume (L), du dustfall container	ust area (cm2), or area (cm2)		0		
Date received by	lab	U.	8113	2	11113
Lab Job Number:		271	300244		
Lab Sample Num	ber:	271	300244		
Number of grids	prepared		3		
Prepared by		D. 1	Barney		
Preparation date		21	Sign		ms Tilli?
EPA COG Numb	er:	04	12-003		
Secondary filter p	oore size (um)		0.2		

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/26/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-57
Archive filter(s) storage location	ESAT Archive
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Lab Blank
Estimated Particulate Loading (%)	

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio (circle one):	
none ≥ 3:1 ≥ 5:1	
Minimum Length (um): 5 es	ms 711113
Minimum Width (um): 0 25 Name	(1,1,1)
[회문문문화] _ 는 . L 및 크고 그렇게	

Stopping Rules:	
Target Sensitivity:	
Max Area Examined:	0.1
Target # of Structures:	

F-factor Calculation:

CH Not

Counted

EDS

Indirect	Prep Inputs
	Fraction of primary filter used fo indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filt (mL) or used for serial dilution

nputs for S	erial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

_A = Libby-type ar	mphibole
--------------------	----------

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one)

(Yes)	No

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Width

Length

Analyzed by:			
Analysis date:			
Instrument:			

Grid ope	ning	traverse	direction	(circle	one

Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

263



Laboratory IC	):	EMSL27		
Instrument ID		JEOL 100 GX II (27- 2)		II (27-
Voltage (KV)		100		
Mag.	4,80	00 X HIGH		<u> </u>
Grid opening (mm2)	area	0.013		
Scale: 1L =		1		
Scale: 1D =				
Primary filter (mm2)	area	385		
Secondary Filter Area (mm2)		360		
Category (Field, Blank)		Field		
Primary filter pore size (um)		0.8		

EPA Sample Number:	BA-00012	Tag:	AL1	
Matrix (A=Air, D=D Dustfall):	A			
Air volume (L), dus dustfall container a			387	
Date received by la	ab	5/21/2013		
Lab Job Number:		271300244		
Lab Sample Number:		271300244-0004		
Number of grids p	repared		10	
Prepared by		D. Barney		
Preparation date		21	5109	
EPA COC Number:		04	12-003	
Secondary filter pore size (um)			0.2	

		F.M
	Analyzed by:	E.Wyatt-Pescador
	Analysis date	6/26/2013
	Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
	If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
	Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
	Grid storage location	2713-LIB-56
	Archive filter(s) storage location	ESAT Archive
	Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Recount Same
ms 711143	Estimated Particulate Loading (%)	7

F-Factor Calculation (Indirect Preps Only):

Enter data in appropriate cells provided to the right---->

Recording Rules:	
Minimum Aspect Ratio (circle one):	
none (≥3:1) ≥ 5:	1
Minimum Length (um): 5 e.6	
Minimum Width (um): 0-35 Non	•

Stopping Rules:	
Target Sensitivity:	0.0004
Max Area Examined:	10
Target # of Structures:	25

Not	F-factor Calc	ulation:							
nted	Indirect Prep	Indirect Prep Inputs							
	i ir	raction of primary filter used for ndirect prep or ashing For dust and dustfall, enter 1.0]							
		First resuspension volume or insate volume (mL)							
		olume applied to secondary filter mL) or used for serial dilution							
	Inputs for Se	rial Dilutions							
	8	Second resuspension volume (mL)							
		/olume applied to secondary filter mL) or used for serial dilution							
		Fhird resuspension volume (mL)							
		/olume applied to secondary filter mL)							
	Input for Ash	ing of Secondary Filter							

1	Grid	Structure	No. of Structures		Dime	nsions	Identification	Mi	Mineral Class (see below)					Sketch/ Comments	1 = y	es, blank	= no		F-factor Calculation:
Grid	Opening	Туре	Primary	Total	Length	Width	igenuncation	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch Comments	Sketch	Photo	EDS	CH Not Counted	Indirect Prep Inputs
Gl	Al	M																	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	A3	mo																	First resuspension volume or rinsate volume (mL)
	A5	W																	Volume applied to secondary filter (mL) or used for serial dilution
	A1	ND																	Inputs for Serial Dilutions
	A9	NO																	Second resuspension volume (mL)
63	A2	an																	Volume applied to secondary filter (mL) or used for serial dilution
	A4	W																	Third resuspension volume (mL)
	AU	MD																	Volume applied to secondary filter (mL)
	194	MD																	Input for Ashing of Secondary Filter
	Alo	W																	Fraction of secondary filter used fo ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

(Yes)	•
\ /	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:						
Analysis date:						_
Instrument:			<u> </u>		<u> </u>	

Grid opening traverse direction (circle one):

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

# Indirect Preparation Record



TEM Air (Circle One)

TEM Dust

**PCM** 

EFA 360 (mm2)

Indirect without ashing Dilution Filtration Indirect with Ashing Prepped by: Date: Volume of Volume of Volume Fraction 1st Volume 1st 2nd Re-Volume 2nd Re-3rd Re-Volume Fraction used to Volume OK to EMP of filter Resuspend applied to Resuspend applied to suspend suspend suspend applied to of filter resuspend applied to Prep to 4/15/09 used Volume filter Volume filter used used Volume filter ashed residue 2nd filter Grid? Order ID Sample # Y/N mL mL mL mL mL mL mL mL mL mL 270900045 100 BATOOI 10 15 25 50 1/2 10 BA-00002 100 15 25 50 1/2 BA-20037 100 10 15 25 50 1/2 BA00038 10 100 15 25 50 1/2 FilBankon 100 y 100 AshBunk 100 100 MB 100 100 Y

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Page \_\_\_\_\_ of \_\_\_\_





TEM Air (Circle One)

TEM Dust

**PCM** 

EFA <u>360</u> (mm2)

		Indirect w	ithout ashing		Dilution Filtra	tion			indirect w	ith Ashing				
Prepped by:	4/15/09	Fraction of filter used	1st Resuspend Volume	Volume applied to filter	Volume of 1st Resuspend used	2nd Re- suspend Volume	Volume applied to filter	Volume of 2nd Re- suspend used	3rd Re- suspend Volume	Volume applied to filter	Fraction of filter ashed	Volume used to resuspend residue	Volume applied to 2nd filter	OK to Prep to Grid?
Order ID	Sample #		mL	mL	mL	mL	mL	mL	mL	mL		mL	mL	Y/N
270900045	BATOCOI										V2	100	10	
													15	
													25	
													<b>5</b> 0	Y
	BA-00002										1/2	( જ	ю	7
													12	
	·												25	y
													50	
	BA-40037										1/2	low	(0	
													15	
													25	У
													5 b	
	BA10038										1/2	100	10	
	,												15	
													57	
													50	У
	FilBlankon						-				<b>½</b>	100	100	y
	AshBank										<b>q</b> #1	100	00)	У
	MB											100	וסט	Y
26														

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Page \_\_\_\_\_ of \_\_\_\_

July 3, 2013

Mr. Doug Kent TechLaw, Inc. ESAT Region 8 16194 W. 45<sup>th</sup> Drive Golden, CO 80403 303-312-7725

RE:

SDG Narrative – TEM Analysis by ISO 10312

EMSL Analytical, Inc. Laboratory Order ID: 271300245

Dear Mr. Kent:

Eight samples were received by the Libby Lab on May 21, 2013 and signed for by the sample receiving clerk. The samples were assigned to an internal EMSL laboratory order ID number of 271300245. Each sample was assigned a unique, sequential laboratory ID number and the job was entered into the Laboratory Information Management System (LIMS). The laboratory ID numbers and the login information are summarized on the EMSL Internal Chain of Custody. Sample condition and signatures are recorded on the original Chain of Custody OU6-052013 submitted by TechLaw, Inc.

These samples were analyzed in accordance with TEM ISO 10312: 1995 Ambient Air Determination of Asbestos Fibres Direct Transfer Transmission Electron Microscopy, as modified by lab modifications specific to the Libby Project.

Results were e-mailed to the Libby Distribution Group and uploaded to the FTP site beginning on July 2, 2013. If you have any questions or require additional information, please do not hesitate to contact me at 856-303-2540.

Sincerely,

EMSL Analytical, Inc.

Charles LaCerra

Special Projects Manager

Charles La Cerra

271300245

# Chain of Custody Record

Samples from: Send to: Andrea Wandler (406) 295-9151 Roy Pescador (406) 293-9066 Chain of Custody Number OU6-052013 TechLaw/ESAT Region 8 Number of Samples EMSL Analytical, Inc. 8 303 N. 3rd Street 107 W. 4th Street Analytical Summary Sheet SUPPABSOU6-0413 Rev. 0 Troy, MT 59935 Libby, MT 59923 Date Shipped Special Instructions: Samples re-submitted as per EPA request for supplemental analysis. Samples collected during OU6 pedestrian trespasser receptor ABS (September 2008). Samples transferred from COC L14656.

	Sample ID	Tag	Sample Date	Matrix	Volume (L)	Filter Pore Size (um)	Low Volume Sample ID	Analysis Requested	Turnaround Time (days)	Media Code	Comments
灲	BA-00032	AL1	9/22/2008	Air	780	0.8	-	TEM-ISO	30	Α	
X	BA-00033	AL1	9/22/2008	Air	658	0.8	-	TEM-ISO	30	Α	
X	BA-00040	AL1	9/23/2008	Air	780	0.8	+	TEM-ISO	30	Α	
X	BA-00041	AL1	9/23/2008	Air	718	0.8	-	TEM-ISO	30	Α	
X	BA-00050	AL1	9/24/2008	Air	806	0.8	_	TEM-ISO	30	Α	
섺	BA-00051	AL1	9/24/2008	Air	791	0.8	_	TEM-ISO	30	Α	
X	BA-00061	AL1	9/25/2008	Air	630	0.8	-	TEM-ISO	30	Α	
ᄮ	BA-00062	AL1	9/25/2008	Air	602	0.8	_	TEM-ISO	30	Α	
-					<u> </u>						
F											
L										-	
L				· · · · · · · · · · · · · · · · · · ·							
L											
L											
L				·							

Relinquished by:	Date:	Time:	Received by:	Daţe:	Sample Condition:	
Q 3 Brown Techlaw	05/21/13	12:38	Dew Borney EMSZ	05/21/12	OK ACCEPT	
Relinquished by:	Date:		Received by:	Date:	Sample Condition:	

# INTERNAL CHAIN OF CUSTODY

5/28/2013 1:51:41 PM

Order ID: 271300245

Attn:

Fax:

Doug Kent

TechLaw, Inc.

**ESAT Region 8** 16194 W. 45th Drive

Golden, CO 80403

Phone: (303) 312-7725

Project: **0U6-052013** 

Samples collected 9/22, 23, 24, 25/2008

Customer ID:

Customer PO:

Received:

05/21/13 12:38 PM

EMSL Order: EMSL Proj ID:

Libby

271300245

TECH25

Cust COC ID

Test:

**TEM ISO 10312** 

Matrix

Date

Date

Date:

TAT:

4 weeks

Qty:

Acct Sts:

N30

Sisprsn: rdemalo

Logged:

kcolberg

Date: 5/21/2013

Inter- Lab Sample Transfer

Samples Relinquished:

Samples Received:

Package Mailed to Cinnaminson: KC Date 4/2013

Method of Delivery: Fedex

Includes: (Circle)

Benchsheets Micrographs

Sample Slides

GridBox

Sample filters Other

Final Package Received:

Acceptable

Sample 1 4 1 **Condition:** 

Unacceptable

Comments

Initial Prep (Initials/Lab): Filter Prep (Initials/Lab):

For Special Projects Use Only:

Grid Prep (Initials/Lab):

QC Selection:

Date Package Review: Date Package Mailed:

Date:

Date:

Date:

## **Special Instructions**

Order ID	Lab Sample #	Cust. Sample	# Location	Due Date
271300245	271300245-0001	BA-00033	Jan hold	7/2/2013 5:00:00 PM
271300245	271300245-0002	\BA-00033	6191011	7/2/2013 5:00:00 PM
271300245	271300245-0003	\BA-00040		7/2/2013 5:00:00 PM
271300245	271300245-0004	\BA-00041		7/2/2013 5:00:00 PM
271300245	271300245-0005	BA-00050		7/2/2013 5:00:00 PM
271300245	271300245-0006	BA-00051		7/2/2013 5:00:00 PM
271300245	271300245-0007	BA-00061		7/2/2013 5:00:00 PM
271300245	271300245-0008	BA-00062	2713-LIB-53	$(A - Q)^{7/2/2013}$ 5:00:00 PM

## LIBBY

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00032	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	50
Lab Sample Number	271300245-0001	Number of Grid Openings (chrysotile)	50
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	780 L
Prep	Direct	Sensitivity (amphibole)	7.59E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	7.59E-04 s/cc
Est. Particulate Loading	5%	Area Examined (amphibole)	0.650 mm2
	<u> </u>	Area Examined (chrysotile)	0.650 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FILE NAME:

Laboratory ID:

Instrument ID

Voltage (KV)

Magnification

Scale: 1L =

Scale: 1D =

Category

Filter Status

(do not include X)

Grid opening area (mm²)

Primary filter area (mm²)

Secondary Filter Area (mm²)

4,800

ANALYZED

OU6-052013\_BA-00032\_271300245-0001\_TEM-ISO\_AR\_06-13-13\_D\_NotQC\_C0.xlsm

LIBBY

TEM Asbestos Structure Count

FILE TYPE: Original

Original 

Recording Rules:

3:1

5.00

0.25

Stopping Rules

770

	Livules.	Stopping Rules.				
,	Minimum Aspect Ratio	0.00090	Target Sensitivity			
	Minimum Length (um)		GOs required to reach target			
	Minimum Width (um)	1 10 000	Maximum Area Examined (mm²)			

F-factor Calculation:

25 Maximum # of Structures

Estimated # of GOs required

GOs required to

reach max area

**Indirect Prep Inputs** 

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

**Inputs for Serial Dilutions** 

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor

Grid opening traverse direction:

V

A	4 . 1		
Subb	iementai	AIL	Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample EMSL27 BA-00032 Tag AL1 Number: OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or 100 780 dustfall container area (cm²): LOW Date received by lab 5/21/2013 0.0130 Lab Job Number: 271300245 1.000 Lab Sample Number: 271300245-0001 1.000 Number of grids prepared 10 385.0 Prepared by (e.g., M. Smith) D. Barney 360.0 Preparation date 6/10/2013 Field EPA COC Number OU6-052013

Estimated Particulate Loading (%)

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador			
Analysis date	6/13/2013			
Prep	Direct	•		
If sample type = air, is there loose material or debris in the cowl?	No	•		
Analysis Method	TEM-ISO	•		
Analysis Method SOP	rsis Method SOP ISO 10312			
Grid storage location	Grid storage location 2713-LIB-5			
Archive filter(s) storage location	Cinnaminson			
F- factor	1			
Lab QC Type	NOT QC	<b>~</b>		

COMMENTS		
L	 	

5%

EPA SAMPLE ID: BA-00032 LAB SAMPLE ID: 271300245-0001	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	ERROR CHECK  OK - No errors found
Data Entry by (e.g., M. Smith) A. Fearfield  Data Entry date 6/17/2013	QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013		

·		_ : '	6/17/2013			ı	QA Gale	7/1/2013	·			J							
Target	sensitivity	Reached-C	omplete cu	urrent GO,	then stop	١.													
Grid	Grid	Structure		tructures	Dimens	ions (a)	Identification		Mineral C	lass (b)		Mineral	neral EDXA		1 = ve	s, blank	= no	CH Not	
	Opening	Туре	Primary	Total	Length	Width	] Identification	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch			CH Not Counted (e)	
A1	B2	ND				A 4 4 4 1 1	1	,				1 2 2 2 2 7 2 7 2 7 2 7 2 7 2 7 2 7 2 7		- Commons		1 11010	100	Coduled (6)	
A1	B4	ND		S						7		<del>                                     </del>			<del> </del>	<del></del>			
A1	B6	ND			7 3 12 1					-		-			<del> </del>	ļ			
A1	B8	ND		5 4 4 7		7 7 7 7			307 77			<del> </del>			<del> </del>	-			
A1	B10	ND					-		<del></del>	_				<del></del>					
A1	C1	ND												<u> </u>					
A1	C3	ND	<del></del>							<del> </del>									
A1	C5	ND										-				ļ <u>.</u>			
A1	C7	ND ND					<del></del>		<b></b>										
A1	C9	ND ND							ļ										
A1	D2	ND ND				<u> </u>													
A1	D2													-					
		ND						i											
A1	D6	ND			7 /														
A1	D8	ND									100								
A1	D10	ND								1		1.1						-	
A1	E1	ND			100 100	1.00													
A1	E3	ND						11				1. 1.							
A1	E5	ND	5 1 2 77		5 7 . 113	1000	S. 100 (100)	1.0	1 5		A. 1	1 m							
A1	E7	ND	A STAN	7 1 2 2 3			11 1 11 11 11 11	3, 33	43.3			·	-						
A1	E9	ND	1.1		A 10	7. J. P. P. H.	No. 1	A	7						·				
A1_	F2	ND	14 P. V				71.0						;		-				
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А3	E10	ND																	

## LIBBY

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00033	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	55
Lab Sample Number	271300245-0002		
Matrix	Air		0.013 mm2
Category	Field	Volume (L) or Area (cm2)	658 L
Prep	Direct	Sensitivity (amphibole)	8.18E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	8.18E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.715 mm2
		Area Examined (chrysotile)	0.715 mm2
Lab Sample Number Matrix Category Prep Analysis Method	Air Field Direct TEM-ISO	Number of Grid Openings (chrysotile) Grid opening area Volume (L) or Area (cm2) Sensitivity (amphibole) Sensitivity (chrysotile) Area Examined (amphibole)	55 0.013 mm2 658 L 8.18E-04 s/cc 8.18E-04 s/cc 0.715 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)
Rules:	3:1	5	0.25

Stopping	
Rules:	

Target Sens.	Max AE (mm²)	Max N LA
0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FILE NAME:

OU6-052013\_BA-00033\_271300245-0002\_TEM-ISO\_AR\_06-13-13\_D\_NotQC\_C0.xism

FILE TYPE: Original •

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### **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27		EPA Sample Number:	BA-00033	Tag	AL1	
Instrument ID		OL 100 C	X II (27-2	Matrix			Air	
Voltage (KV)		100	0	1	Air volume (L), dust sample area (cm²), or dustfall container area (cm²):			
Magnification (do not include X)	LO	W	Date received	5/21/2013				
Grid opening area	0.01	0.0130		Lab Job Number:			27130024	
Scale: 1L =	1.00	1.000		Lab Sample Number:			271300245-00	
Scale: 1D =	1.00	00	Number of grids prepared			10		
Primary filter area (	385	.0	Prepared by (	D. Barney				
Secondary Filter Area (mm²)		360	.0	Preparation date			6/10/2013	
Category		Field	•	EPA COC Nur	mber		OU6-05	520
Filter Status		ANALYZED	-	Estimated Par	ticulate Load	ing (%)	49	<del></del> -

Analyzed by (e.g., M. Smith)	E. Wyatt-Pes	E. Wyatt-Pescadoi			
Analysis date	6/13/201	3			
Prep	Direct	•			
If sample type = air, is there loose material or debris in the cowl?	No	•			
Analysis Method	TEM-ISO	•			
Analysis Method SOP	ISO 10312	2			
Grid storage location	2713-LIB-	53			
Archive filter(s) storage location	Cinnamins	on			
F- factor	1				
Lab QC Type	NOT QC	•			

Analyzed by (e.g., M. Smith)	E. Wyatt-Pesc	E. Wyatt-Pescado			
Analysis date	6/13/2013	6/13/2013			
Prep	Direct	•			
If sample type = air, is there loose material or debris in the cowl?	No	•			
Analysis Method	TEM-ISO	•			
Analysis Method SOP	ISO 10312	ISO 10312			
Grid storage location	2713-LIB-53				
Archive filter(s) storage location	Cinnaminso	n			
F- factor	1				
Lab QC Type	NOT QC	•			

	Recor	din	g Rules:	Stopping Rules:				
_	3:1	•	Minimum Aspect Ratio	0.00090	Target Sensitivity			
	5.0	0	Minimum Length (um)	51	GOs required to reach target			
	0.2	5	Minimum Width (um)	10.000	Maximum Area Examined (mm²)			
]			•	770	GOs required to reach max area			
	F-fact	F-factor Calculation:				25	Maximum # of Structures	
]					Estimated # of GOs			

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

51

required

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

-factor

Grid opening traverse direction:	V

#### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

COMMENTS

 $\infty$ 

 EPA SAMPLE ID:
 BA-00033
 Matrix
 Air
 Prep
 Direct

 LAB SAMPLE ID:
 271300245-0002
 Analysis Method
 TEM-ISO
 QC Type
 NotQC
 OK - No errors found

Data Entry by (e.g., M. Smith)

A. Fearfield

Data Entry date 6/17/2013

Target Sensitivity Reached-Complete current GO, then stop.

Target S	Sensitivity	Reached-C	omplete c	urrent GO,	then stop	5.	QA gate											
Grid	Grid	Structure	No. of S	tructures		sions (a)			Mineral C	class (b)		Mineral	EDXA	174.	1 = 1/4	s, blank	- 00	
	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	FDS	CH Not Counted (e)
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C1	A6	ND								1	,	1			-			
_C1	A8	ND						7.	a			7 7						
C1	A10	ND	3.74			6.50	1 875 A	74		V 97.0	- A				<del> </del>	<del>                                     </del>		
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C1	В3	ND		7	9.0					<del> </del>					-	<del> </del>		<del></del>
C1	B5	ND	7 TO 100	(11.14.3)	1 7 7	70 S. S. S.			0						-			<del></del>
C1	B7	ND	7.1	1 1 2		1.0		- 7.6		1					1	<del> </del>		
C1	B9	ND													<del> </del>	<del> </del>		
C1	C2	ND	7 - 7 - 7 - 7			77		5 × 77		77.				<del></del>	-			<del></del> -
C1	C4	ND	77 17	3.77						17 7	-	<del> </del>	-		<del>                                     </del>		<del></del>	
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## LIBBY

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00040	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	55
Lab Sample Number	271300245-0003	Number of Grid Openings (chrysotile)	55
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	780 L
Prep	Direct	Sensitivity (amphibole)	6.90E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	6.90E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.715 mm2
		Area Examined (chrysotile)	0.715 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)
Rules:	3:1	5	0.25

Stopping	7
Rules:	

Target Sens.	Max AE (mm²)	Max N LA
0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FILE NAME:

OU6-052013\_BA-00040\_271300245-0003\_TEM-ISO\_AR\_06-13-13\_D\_NotQC\_C0.xlsm

#### FILE TYPE: Original Recording Rules:

# LIBBY

**TEM Asbestos Structure Count** 

Laboratory ID:		EMSL27	<b>V</b>	EPA Sample Number:	BA-00040	Tag	AL1	-
Instrument ID		OL 100 C	X II (27-2	Matrix			Air	•
Voltage (KV)		100	100		Air volume (L), dust sample area (cm²), or dustfall container area (cm²):			
Magnification (do not include X)	LOV	N	Date received	Date received by lab			013	
Grid opening area	0.01	30	Lab Job Numi	ber:		271300245		
Scale: 1L=	1.00	00	Lab Sample Number:			271300245-000		
Scale: 1D =		1,00	00	Number of grid	ds prepared		10	
Primary filter area (	mm²)	385.	.0	Prepared by (	e.g., M. Smith	)	D. Barr	пеу
Secondary Filter A	rea (mm²)	360.	.0	Preparation date			6/10/2013	
Category		Field	•	EPA COC Number			OU6-052013	
Filter Status		ANALYZED	•	Estimated Par	ticulate Loadi	ng (%)	4%	
COMMENTS							<u> </u>	

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescado	,			
Analysis date	6/13/2013				
Prep	Direct	,			
If sample type = air, is there loose material or debris in the cowl?	No 🔻				
Analysis Method	TEM-ISO				
Analysis Method SOP	ISO 10312	ISO 10312			
Grid storage location	2713-LIB-53	_			
Archive filter(s) storage location	Cinnaminson	•			
F- factor	1				
Lab QC Type	NOT QC	_			

## GOs required to Minimum Length (um) reach target Maximum Area 0.25 Minimum Width (um) 10.000 Examined (mm2) GOs required to 770 reach max area Maximum # of 25 Structures F-factor Calculation: Estimated # of GOs 43 required Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing -factor ٧ Grid opening traverse direction: Supplemental Air Analysis Check box if supplemental analysis Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

**Stopping Rules:** 

Target Sensitivity

0.00090

▼ Minimum Aspect Ratio

EPA SAMPLE ID: BA-00040 LAB SAMPLE ID: 271300245-0003	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	ERROR CHECK  OK - No errors found
Data Entry by (e.g., M. Smith)  A. Fearfield  Data Entry date 6/17/2013	QA by (e.g., M. Smith)  A date  7/1/2013		

	Grid	Ctore	AL CO	No. of Structures Dimensions						Warrand (I)			Mineral Olivert								
Grid	Opening	Structure Type					lass (b)		Mineral	EDXA		1 = yes, blank = no		CH Not							
			Primary	lotal	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e			
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E1	A3	ND																			
E1	A5	ND						4.	1.			1									
E1	A7	ND			1.		L														
E1	A9	ND	14																		
E1	B2	ND																			
E1_	B4	ND			130	100															
E1	B6	ND	. 1 - 4 - 7	$\{1,2,3,4,5\}$		1 5 5 E								/							
E1	B8	ND		4.1											<del></del>						
E1	B10	ND						14,							<del> </del>						
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E3	E8	ND									2										
E3	E10	ND				. 7.7															
E3	F1	ND												······································							
E3	F3	ND				Age 1								<del></del>							
E3	F5	ND				7					1			· · · · · · · · · · · · · · · · · · ·							
E3	F7	ND		47.7	V + 1 47			2/4			2.0										
E3	F9	ND				680.00									i						

## LIBBY

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00041	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	50
Lab Sample Number	271300245-0004	Number of Grid Openings (chrysotile)	50
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	718 L
Prep	Direct	Sensitivity (amphibole)	8.25E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	8.25E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.650 mm2
		Area Examined (chrysotile)	0.650 mm2

Magnification:	LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos									
Total													
PCME	0	0	0	0									

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FΙΙ	⊏	NΔ	ME	٠

OU6-052013\_BA-00041\_271300245-0004\_TEM-ISO\_AR\_06-14-13\_D\_NotQC\_C0.xlsm

FILE TYPE: Original

# LIBBY **TEM Asbestos Structure Count**

Laboratory ID: EM		EMSL27	lacksquare	EPA Sample Number:	BA-00041	Tag	AL1	•
Instrument ID		OL 100 C	X II (27-	-2 Matrix			Air	
Voltage (KV)	100	,		Air volume (L), dust sample area (cm²), or dustfall container area (cm²):			В	
Magnification (do not include X)	LOV	٧	Date received	by lab		5/21/2	013	
Grid opening area	0.01	30	Lab Job Number:			2713000245		
Scale: 1L =		1.00	0	Lab Sample N	lumber:		27130024	15-00
Scale: 1D =		1.00	0	Number of grid	ds prepared		10	)
Primary filter area (	mm²)	385.	0	Prepared by (	Prepared by (e.g., M. Smith)		D. Bamey	
Secondary Filter A	360.	0	Preparation da	Preparation date		6/10/2013		
Category	Field	•	EPA COC Nui	mber		OU6-05	201	
Filter Status AN		ANALYZED	•	Estimated Par	ticulate Load	ing (%)	4%	,

Analyzed by (e.g., M. Smith)	E	E. Wyatt-Pescado		
Analysis date		6/14/20	13	
Prep	Di	rect	•	
If sample type = air, is there loose material or debris in the cowl?	No	)	•	
Analysis Method	TE	EM-ISO	•	
Analysis Method SOP		ISO 10312		
Grid storage location		2713-LIB-53		
Archive filter(s) storage location		Cinnaminson		
F- factor		1	r Njesa Roje	
Lab QC Type	NOT	QC	•	

Analyzed by (e.g., M. Smith)	E. Wyat	E. Wyatt-Pescado		
Analysis date	6/1	6/14/2013		
Prep	Direct	•		
If sample type = air, is there loose material or debris in the cowl?	No	•		
Analysis Method	TEM-ISO			
Analysis Method SOP	ISC	ISO 10312		
Grid storage location	2713	-LIB-53		
Archive filter(s) storage location	Cinna	aminson		
F- factor		1		
Lab QC Type	NOT QC	-		

#### Recording Rules: Stopping Rules: ▼ Minimum Aspect Ratio 0.00090 Target Sensitivity GOs required to Minimum Length (um) reach target Maximum Area 0.25 Minimum Width (um) 10.000 Examined (mm²) GOs required to 770 reach max area Maximum # of 25 Structures F-factor Calculation: Estimated # of GOs 46 Indirect Prep Inputs required

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

-factor

Grid opening traverse direction:	V
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### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

# COMMENTS

4

EPA SAMPLE ID: BA-00041 LAB SAMPLE ID: 271300245-0004	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	ERROR CHECK  OK - No errors found
Data Entry by (e.g., M. Smith)  A. Fearfield  Data Entry date 6/17/2013	QA by (e.g., M. Smith) M. Smollock QA date 7/1/2013		

Target	Canelthylty Sanelthylty	Reached-C	omplete e		Ab4	j	QA date	7/1/201	<u> </u>			J						
	Grid	Structure	Ompiete C	Structures	tnen stop	) <u>.</u>	T					,			,			
Grid	Opening	Type	Primary	Total		sions (a)	Identification		Mineral C			Mineral	EDXA			s, blank	= no	CH Not
G1	B1	ND ND	Primary	10(8)	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e
G1	B3	ND		-	<del> </del>		1.77						1					
G1	B5	ND	-	-											<u> </u>	<u> </u>		
G1	B7	ND		1		-												
G1	B9	ND	<u> </u>		-		ļ					ļ			ļ			
G1	C2								<u> </u>	ļ		1						
G1	C4	ND			4													
G1	C6	ND ND		-														
G1	C8	ND ND									·							l
G1	C10	ND		-			ļ											
G1	D1					1 1											-	
		ND							ļ		-							
G1 G1	D3	ND					ļ		ļ					-	<u> </u>			
	D5	ND						·	ļ			ļ						
G1 G1	D7	ND						. 6			<u> </u>							
G1		ND	1 2 2						<u> </u>									
	E2 E4	ND																
G1		ND		ST 75 - 12			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1											
G1	E6	ND			4,554										ļ			
G1	E8	ND ND																
G1	E10	ND						<u> </u>			4.5							
G1	F1	ND																
G1	F3	ND								7.	100							
G1_	F5	ND		2.5 - 2.5 - 2.5	9 Q.1		1											
G1	F7	ND		37						1.77								
G1	F9	ND				2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					1		, a 14			, .		i .
G3	A1	ND				25.72.5												
G3	A3	ND																L
G3	A5	ND																
G3	A7	ND																
G3	A9	ND		44						. Y								
G3	B2	ND																
G3	B4	ND ND			3.5													
G3	B6	ND								2.0		-						l
G3	B8	ND											21					
G3	B10	ND			·													
G3	C1	ND		<u> </u>	<b></b>		-			·		L						
G3	C3	ND										· ·						
G3	C5	ND ND																
G3	C7	ND																
G3	C9	ND						ļ <u>.</u>										
G3	D2	ND				7. 5.												<u> </u>
G3	D4	ND												4 - 12 - 1				
G3	D6	ND	-															
G3	D8	ND			2.3.2.2.2		37,1		1000		7							
G3	D10	ND	- 10															
G3	E2	ND ND	L 47			1 1 1 2 4												
G3	E4	ND	14. 14.				1	1 11 .										
G3	E6	ND	4.7		4	and the fig	<u> </u>				1.4 4 5	L						
G3	E8	ND																
G3	E10	ND	2.3		1			-	l ·						1			

## LIBBY

## TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00050	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	50
Lab Sample Number	271300245-0005	Number of Grid Openings (chrysotile)	50
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	806 L
Prep	Direct	Sensitivity (amphibole)	7.35E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	7.35E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.650 mm2
		Area Examined (chrysotile)	0.650 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FII	F	NΔ	ME.

OU6-052013\_BA-00050\_271300245-0005\_TEM-ISO\_AR\_06-14-13\_D\_NotQC\_C0.xlsm

FILE TYPE: Original •

L	IBBY

#### **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27	•	EPA Sample Number:	BA-00050	Tag	AL1	•	
Instrument ID	OL 100 C	X II (27	-2 Matrix			Air	•		
Voltage (KV)		10	0		Air volume (L), dust sample area (cm²), or dustfall container area (cm²):				
Magnification (do not include X)	4,800	LO	W	Date received	Date received by lab				
Grid opening area	0.01	30	Lab Job Numi	Lab Job Number:					
Scale: 1L =	1.00	00	Lab Sample N	Lab Sample Number:					
Scale: 1D =		1.00	00	Number of grid	Number of grids prepared				
Primary filter area	(mm²)	385	.0	Prepared by (	Prepared by (e.g., M. Smith)				
Secondary Filter A	360	.0	Preparation da	Preparation date			6/10/2013		
Category	Field	-	EPA COC Nur	EPA COC Number					
Filter Status		ANALYZED	•	Estimated Par	ticulate Load	ing (%)	4%		

Analyzed by (e.g., M. Smith)	E. Wyatt-Pes	E. Wyatt-Pescador			
Analysis date	6/14/201	3			
Prep	Direct	•			
If sample type = air, is there loose material or debris in the cowl?	No	•			
Analysis Method	TEM-ISO	•			
Analysis Method SOP	ISO 10312	ISO 10312			
Grid storage location	2713-LIB-	2713-LIB-53			
Archive filter(s) storage location	Cinnamins	on			
F- factor	1				
Lab QC Type	NOT QC	•			

Reco	rdina	Rules:	Stopping Rules:				
3:1	•	Minimum Aspect Ratio	0.00090	Target Sensitivity			
5.0	00	Minimum Length (um)	41	GOs required to reach target			
0.25		Minimum Width (um)	10.000	Maximum Area Examined (mm²)			
		•	770	GOs required to reach max area			
F-factor Calculation:		25	Maximum # of Structures				
Indire	ect Pı	rep Inputs	41	Estimated # of GOs required			

Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

### **Inputs for Serial Dilutions**

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

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#### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

-factor

Ond opening traverse direction.	Grid opening traverse direction:	
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Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

ED. 0.115 12 - 13 - 13 - 13 - 13 - 13 - 13 - 13			ERROR CHECK
EPA SAMPLE ID: <u>BA-00050</u> LAB SAMPLE ID: <u>271300245-0005</u>	Matrix Air Analysis Method TEM-ISO	Prep <u>Direct</u> QC Type NotQC	
	TEMP130	dc Type Notice	OK - No errors found
Data Entry by (e.g., M. Smith) B. Gallagher	QA by (e.g., M. Smith) M. Smollock		
Data Entry date 6/17/2013	QA date 7/1/2013		

Tarant (	Canelthribe Renelthribe	Reached-C	omplete e		M	1	QA date	[//1/201.	3			J						
1	Grid	Structure	omplete c	urrent GO,	tnen stop	) <u>,</u>	Υ							,				
Grid	Opening	Type		tructures	Dimens	sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
11	A1	ND							ļ									
	A3	ND																
	A5	ND			*1 5 July 1					3 11 15	JA 1 6.							
<u>   1</u>	A7	ND				1000	Staphed was been			1,17		1						
11	A9	ND	2 ( St. A				egrap arthur di	4 77 5 49	2 5 5 5	region to	18 1 m/sc		1	e e de var				
- 11	B2	ND					\$4, he part 11 to											
1	B4	ND		Age to the							1							
- 11	B6	ND																
11	B8	ND																-
. 11	B10	ND		<u> </u>					<u> </u>									
11	C1	ND																
11	C3	ND								-	. 6				1	7		
11	C5	ND		1/2 - The Th				1 19	2.00	1.74					1			
	C7	ND	. 1 - 1 - 1		1.0				17-1-19		- 13 f	12.00						
. 11	C9	ND				4 1 (	100 100 2	F 48	3.74									
11	D2	ND				1 11		1997							T			
11	D4	ND		3 3 3 4 5			1 1	100			- 13		47,	***************************************				
11	D6	ND				. 200		100										
	D8	ND		1.46 1. 1.47		15-7-57	¥ 15 15 75 75 1		- 1									
11	D10	ND	-	4 1 1973	1000	on garage			-		200							
	E1	ND	11 7 7		JE 1870 N.S.	1,180,160				7								-
	E3	ND	100	(C. F. 47 C)	+ 7 % (3)	1.7		100		- 7.	772.7		-		<del> </del>			
11	E5	ND	1.7												<del> </del>			
11	E7	ND			7.3													
- 11	E9	ND				<	4								<b>-</b>			
13	A2	ND			100						*****				<del>                                     </del>			
13	A4	ND	1 12	747 12											<del> </del>			
13	A6	ND	100		A Section	1.251.64	A STATE		1			5 1 5			<del>                                     </del>			
13	A8	ND			4 100	A 40.50				7.77	1775	3 1 2 3	7		1			
13	A10	ND	75. x 1 3		14/4 - 34	Y 4. 34.			1	G- 3-1		7.5			<del>                                     </del>			
13	B1	ND				77				7					1			
13	В3	ND	1.0	441114	100		St 188			17 1	-				<del> </del>			
13	B5	ND		71 7 7 7 7		V 1.8 14.37	V 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- 1 A			-	1 2 2 2						
13	B7	ND	4 24 34	Zagunasia	75 Jan 2 15	1 1 1 1									<del> </del>			
13	B9	ND		V. 1.1		7. 7.	. 1977	<i>Al</i> 10		33.0		$\vdash$		<del></del>	<del> </del>			
13	C2	ND		A SA SA		4.00	ર, કો કરોરી જ		5 Y . 4		50 b sc							
13	C4	ND	19,500		100	A STATE	WW. Start B	100		<del>                                     </del>	77	<del>  </del>		<del></del>	+			
13	C6	ND	F4 (19)	The Agree	30 10 10	44. A W			A 37 37		777	71 (4)		<del> </del>	<del>  </del>			
13	C8	ND			74			7.5						<del></del>	-			
13	C10	ND								<del></del>		<del>  </del>						
	D1	ND				· · · · · · · · · · · · · · · · · · ·	3 1, 2 1 1 1 1 1		<b></b>		. 75				+			
13	D3	ND						-	<u> </u>			-			-			
13	D5	ND							-						-			
13	D7	ND		17. 17.				2 3, 37					7 7					
13	D9	ND	7 7 2 7 7 2	47 91 91	100	77. 3.1				<b></b>		<del> </del>			_			<del></del>
13	E2	ND		3 3 3	47 1 1 1 1 1 1		100 A W								<del>  </del>			
13	E4	ND			3. 1.							<del>                                     </del>			<del> </del>			
13	E6	ND								<del></del>					-			<del></del>
13	E8	ND								<del>  </del>		<del></del>		····	<del> </del>			
13	E10	ND										<b> </b>			<del> </del>			
10	<u> </u>	IND		ا ا			L		L			L			J			i

## LIBBY

# TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00051	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	50
Lab Sample Number	271300245-0006	Number of Grid Openings (chrysotile)	50
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	791 L
Prep	Direct	Sensitivity (amphibole)	7.49E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	7.49E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.650 mm2
		Area Examined (chrysotile)	0.650 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)		
Rules:	3:1	5	0.25		

Stopping	
Rules:	

Target Sens.	Max AE (mm²)	Max N LA		
0.0009	10.000	25		

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	CH	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FILE NAME:

Category

COMMENTS

OU6-052013 BA-00051\_271300245-0006 TEM-ISO AR 06-14-13 D NotQC C0.xism

LIBBY

**TEM Asbestos Structure Count** 

FILE TYPE: Original

Analyzed by (e.g., M. Smith)

If sample type = air, is there loose

material or debris in the cowl?

Analysis date

Analysis Method

Analysis Method SOP

Grid storage location

Prep

### **Recording Rules:**

E. Wyatt-Pescador

6/14/2013

ISO 10312

2713-LIB-53

Direct

TEM-ISO

Stopping Rules:										
io	0.00090	Target Sensitivity								

▼ Minimum Aspect Rat Minimum Length (um) 0.25 Minimum Width (um)

GOs required to 42 reach target Maximum Area 10.000 Examined (mm<sup>2</sup>) GOs required to 770 reach max area

F-factor Calculation:

Maximum # of 25 Structures Estimated # of GOs 42 required

**Indirect Prep Inputs** 

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

put for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

-factor

rid opening traverse direction:

1			
Sunniamantai	Air.	Anaka	e ie

Check box if supplemental analysis

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00051 Tag AL1 Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 791 dustfall container area (cm²): Magnification 4.800 LOW Date received by lab 5/21/2013 (do not include X) 0.0130 Lab Job Number: Grid opening area (mm<sup>2</sup>) 271300245 Scale: 1L = 1.000 Lab Sample Number: 271300245-0006 Scale: 1D = 1.000 Number of grids prepared 10 Primary filter area (mm²) 385.0 Prepared by (e.g., M. Smith) D. Barney Secondary Filter Area (mm2) 360.0 Preparation date 6/10/201 T EPA COC Number Field OU6-0520 Filter Status ANALYZED Estimated Particulate Loading (%) 4%

еу	Archive filter(s) storage location	Cinnaminson	
13			
013	F- factor		
	Lab QC Type	NOT QC	
			Ing
			Gri
			Su

 EPA SAMPLE ID:
 BA-00051
 Matrix
 Air
 Prep
 Direct

 LAB SAMPLE ID:
 271300245-0006
 Analysis Method
 TEM-ISO
 QC Type
 NotQC
 OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date 6/17/2013

Target Sensitivity Reached Complete current GO, then stop

	Grid	Camatana	omplete current GO, then s			nop.		T						<del></del>				
Grid	Grid Opening	Structure Type	No. of Structures		Dimensions (a)		Identification		Mineral C			Mineral	EDXA		1 = yes, blank = no			CH Not
			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	Counted (e)
K2	A2	ND			1													
K2	A4	ND				5.15		1. The second				7. 1.						
K2	A6	ND	1.97															
K2	A8	ND		Alle Comments	1.74 1.48		1000				7.5				1.			
K2	A10	ND	1.77					4 .7										
K2	B1	ND		1.3										7	T			
K2	В3	ND																
K2	B5	ND					1		<del>                                     </del>				-	***************************************		-		
K2	B7	ND																
K2	B9	ND		100	1 1 2 1 1		.7	7.7					<del>                                     </del>		+			
K2	C2	ND		74 July 1		77 4 7 3 4 9				7 7		-			<del></del>	-		
K2	C4	ND	11.7				<del> </del>					-			<del> </del>			
K2	C6	ND			-		-	7	<del> </del>	-		-						
K2	C8	ND.		7 7 7						-		<del> </del>						
K2	C10	ND ND			<b> </b>					-					ļ			
K2	D1	ND ND					As a second second		ļ									
K2	D3											ļ						
		ND										ļ						
K2	D5	ND			-	2 2												
K2	D7	ND											200	31 St. 1985				
K2	D9	ND		7 7 5 7							315	Sec.	1					
K2	E2	ND																
K2	E4	ND																
K2	E6	ND									. 7							
K2	E8	ND	19		11			8 9										
K2	E10	ND	6 30,725		477						7.59			1 1 1	<del>                                     </del>			
K4	B2	ND	14 m	11 \$ 1 BH.	5 H ; 349	1,270,00		100	a 1 7 1 1	7.3	4							
K4	B4	ND	100	2.359.475			940) Fr 44		11.		10 F 3	F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			<del></del>			
K4	B6	ND	4.14	V 31 1 1 1 4	2. 775 4	eface to the	707 E. F. T.	7 77 5		77.00	41,00				<del> </del>	_		
K4	B8	ND	-	1000	100										+	<del></del>		
K4	B10	ND		7 77				7 7 7	7.7						+			
K4	C1	ND			7										<del>-</del>			
K4	C3	ND		7 4 7 7				<del></del>										
K4	C5	ND		200					· · · · · ·			<b></b>	-	<u> </u>				
K4	C7	ND		3	7 7 7 7				,i			1 2						
K4	C9	ND												·				
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K4	D8	ND					أحدجا					ļ			1			
K4	D10	ND				27 A A 10				77								
K4	E1	ND				1 - 1 1-25	27 48 1 14	2 3	4.1									
K4	E3	ND				Ar of York	Section and	147	1 2				4.7					
K4	E5	ND							10. To 10.	7					T			
K4	E7	ND																
K4	E9	ND	V	11 1							A				1			
K4	F2	ND	37 1 25												1			
K4	F4	ND		Section 19			- A		1. 1.	7.					<b> </b>			
K4	F6	ND	1.77	77 43		30 00 02									+			
K4	F8	ND		1.7.7	7 .7 .,	7						<b> </b>		······································	<del> </del>			
K4	F10	ND					· · · · · · ·								+	l		

### LIBBY

#### TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00061	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	53
Lab Sample Number	271300245-0007	Number of Grid Openings (chrysotile)	53
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	630 L
Prep	Direct	Sensitivity (amphibole)	8.87E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	8.87E-04 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.689 mm2
		Area Examined (chrysotile)	0.689 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stopping	Target Sens.	Max AE (mm²)	Max N LA
Rules:	3:1	5	0.25	Rules:	0.0009	10.000	25

COUNTS (based on countable structures only)

44411	To the (national of touristation of a of a of a of a of a of a of a of						
Bin	LA	OA	СН	All Asbestos			
Total							
PCME	0	0	0	0			

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

ᇤ	F	NA	ME	•

OU6-052013\_BA-00061\_271300245-0007\_TEM-ISO\_AR\_06-14-13\_D\_NotQC\_C0.xlsm

Prepared by (e.g., M. Smith)

Estimated Particulate Loading (%)

Preparation date

EPA COC Number

LIBBY

TEM Asbestos Structure Count

D. Barney

6/10/2013

OU6-052013

4%

FILE TYPE: Original

### Recording Rules:

#### Stopping Rules: .00090 Target Sensitivity GOs required to

	•	Minimum Aspect Ratio	0.
ı	0	Minimum Length (um)	

Minimum Length (um)	1 53	rea
Minimum Width (um)	10.000	Ma

53	reach target
10.000	Maximum Area
10.000	Examined (mm
770	GOs required to
770	reach may area

reach max area

### F-factor Calculation:

5.00

0.25

#### Maximum # of 25 Structures Estimated # of GOs 53 required

#### **Indirect Prep Inputs**

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial

#### Input for Ashing of Secondary Filter

Erostion	of cocondon	. 6kaaa	for ochina
rraction	of secondary	y miler used	i ior asning

F-factor

Grid opening traverse direction:	/
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#### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00061 Tag AL1 Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 630 dustfall container area (cm²): Magnification 4,800 LOW Date received by lab 5/21/2013 (do not include X) Grid opening area (mm²) 0.0130 Lab Job Number: 271300245 Scale: 1L = Lab Sample Number: 1.000 271300245-0007 Scale: 1D = 1.000 Number of grids prepared 10

385.0

360.0

•

Field

ANALYZED

E. Wyatt-Pescador	
6/14/2013	
Direct	
No 🔻	
TEM-ISO	
ISO 10312	
2713-LIB-53	
Cinnaminson	
1	
NOT QC	

#### COMMENTS

Filter Status

Category

Primary filter area (mm²)

Also analyzed on 7/1/13.

Secondary Filter Area (mm²)

	4		
	1		
	1		
	1		
	1		
	1		
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	1		
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EPA SAMPLE ID: BA-00061 LAB SAMPLE ID: 271300245-0007	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type NotQC	ERROR CHECK  OK - No errors found
Data Entry by (e.g., M. Smith)  B. Gallagher  Data Entry date 6/17/2013	QA by (e.g., M. Smith) M. Smollock  QA date 7/2/2013		

	Data	Entry date	6/17/2013			J	QA date	7/2/2013	3									
Target 3	Sensitivity	Reached-C	omplete c	urrent GO,	then stop	).						•						
Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)			Mineral C	lass (h)		M2	EDXA		1 - 10	s, blank		
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	CH	NAM	Mineral	EUXA	Comments	Sketch			CH Not
M2	A1	ND			Longar	771001		1-5	<u> </u>	CH	IVAIVI	Desc (c)	Obs (a)	Comments	Sketch	Photo	EDS	Counted (e)
M2	A3	ND		7.		-	·	-			-							
M2	A5	ND		·	ļ													
M2	A7	ND																
M2	A9	ND					100		L	1.0								
M2	B2	ND			× .			1.74	4									
M2	B4	ND	1		1000													
M2	B6	ND						1 A 1 A	1.1	-				<del></del>				
M2	B8	ND				45.71		*** · · · · · · · · · · · · · · · · · ·		100		77.					<del>  </del>	
M2	B10	ND							<b></b>					<del></del>		<u> </u>		
M2	C1	ND			<del></del>					<del></del>	-							
M2	C3	ND		ļ	<del> </del>	<del> </del>											ļI	
M2	C5								_									
		ND																
M2_	C7	ND					Art Test to	S 12								- 1		
M2	C9	ND				47(3)	25.0			112		11 11 17						
M2	D2	ND	1.1	100		1. 1		100		181		1.						
M2	D4	ND	11.									9.7			· · · · · · · · · · · · · · · · · · ·			
M2	D6	ND								_								
M2	D8	ND									<del></del>							
M2	D10	ND																
M2	E1	ND			<del>                                     </del>			<del> </del>	-	ļ								
						-				_	L			***				
M2	E3	ND								<u> </u>		- 6						
M2	E5	ND								11. 77	31 TH		24					
M2	E7	ND			1,111	5. 7. 1		100	100		500	Special Control						
M2	E9	ND				4		7 50	A 100	7		4						
M4	A2	ND	- 4				1999			77			-		· · · · · · · · · · · · · · · · · · ·			
M4	A4	ND			12.													
M4	A6	ND								-							<del></del>	
M4	A8	ND			<del>                                     </del>					37. 30.								
M4	A10	ND			-			-										
M4	B1	ND			<del> </del>	-		<b></b>						27-0		-		
M4	B3	ND ND																
														1				
M4	B5	, ND									100	100						
M4	B7	ND	:				19 ( ) ( ) ( )			100				The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s				
M4	B9	ND	200			1000	100			16	77.7							
M4	C2	ND		1.1	4 (1)	10.0		1.7		77.7	77 7 7							
M4	C4	ND	,			1. 10	3 3											
M4	C6	ND					. 10 10 10 10 10 10 10 10 10 10 10 10 10	-						· · · · · · · · · · · · · · · · · · ·			<del>i</del>	***
M4	C8	ND		9														
M4	C10	ND		77.							1							
M4	D1	ND			<del>                                     </del>	A		<b> </b>			<del></del>				L			
M4	D3	ND		<u> </u>	<del> </del>	-		-						<del></del>				
				-					11. 11.11						3.7			
M4	D5	ND						Targ.		11								
M4	D7	ND			<u> </u>						4 .							
M4	D9	ND					100			out to								
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M4	E4	ND			3.5	4. 1.1				100							· · · · · · ·	
M4	E6	ND		7 1 1211	7.7	40 61	1.7		3.77	-		-	,					
M4	E8	ND		745 T			18 8 8 8 1 Table	_	-	7,	<del></del>	30						———
M4	E10	ND			<del> </del>			<del></del>	-	·								
M6									<b> </b>									
	B1	ND				3.6		L				L	1 1					
M6	B3	ND								. 1	200							
M6	B5	ND				1 - 1 7	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		17			1.0		1.				

### LIBBY

### TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00062	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	NOT QC	Number of Grid Openings (amphibole)	60
Lab Sample Number	271300245-0008	Number of Grid Openings (chrysotile)	60
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	602 L
Prep	Direct	Sensitivity (amphibole)	8.20E-04 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	8.20E-04 s/cc
Est. Particulate Loading	3%	Area Examined (amphibole)	0.780 mm2
		Area Examined (chrysotile)	0.780 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	
Rules:	3:1	5	0.25	

Stopping
Rules:

Target Sens.	Max AE (mm²)	Max N LA
0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

F۱	F	NΔ	MF:	٠

COMMENTS

OU6-052013\_BA-00062\_271300245-0008\_TEM-ISO\_AR\_06-14-13\_D\_NotQC\_C0.xlsm

FILE TYPE: Original  $\blacksquare$ 

#### LIBBY

#### **TEM Asbestos Structure Count**

Laboratory ID:		EMSL27		EPA Sample Number:	BA-00062	Tag	AL1	•
Instrument ID		OL 100 (	CX II (27	-2 Matrix			Air	-
Voltage (KV)		10	0	Air volume (L), du dustfall container	602			
Magnification (do not include X) 4,800		LO	w	Date received	Date received by lab			2013
Grid opening area	Grid opening area (mm²)		130	Lab Job Number:			271300245	
Scale: 1L =		1.0	00	Lab Sample Number:			271300245-000	
Scale: 1D =		1.0	00	Number of grids prepared			10	
Primary filter area (mm²)		385	i.0	Prepared by (e.g., M. Smith)			D. Barney	
Secondary Filter A	rea (mm²)	360	.0	Preparation da	ate		6/10/	2013
Category		Field	•	EPA COC Nur	mber	-	OU6-0	52013
Filter Status		ANALYZED	-	Estimated Par	ticulate Loadi	ing (%)	3	%

Analyzed by (e.g., M. Smith)	E. Wyatt-Pescador
Analysis date	6/14/2013
Prep	Direct 🔻
If sample type = air, is there loose material or debris in the cowl?	No 🔻
Analysis Method	TEM-ISO
Analysis Method SOP	ISO 10312
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
F- factor	
Lab QC Type	NOT QC

#### **Recording Rules:** Stopping Rules: ▼ Minimum Aspect Ratio 0.00090 Target Sensitivity GOs required to 5.00 Minimum Length (um) 55 reach target Maximum Area 0.25 Minimum Width (um) 10.000 Examined (mm²) GOs required to 770 reach max area Maximum # of 25 Structures F-factor Calculation: Estimated # of GOs 55 required Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Inputs for Serial Dilutions Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing -factor Grid opening traverse direction: ٧

	Supplen	<u>nental</u>	Аіг	<u>Analysis</u>
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Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

 EPA SAMPLE ID:
 BA-00062
 Matrix
 Air

 LAB SAMPLE ID:
 271300245-0008
 Analysis Method
 TEM-ISO

 Prep
 Direct

 QC Type
 NotQC

 OK - No errors found

Data Entry by (e.g., M. Smith)

Data Entry date

6/17/2013

QA by (e.g., M. Smith)

QA date

7/1/2013

	0	Cincolina	NI		then stop			1										
Grid	Grid Opening	Structure Type	No. of S	tructures	Dimen:	sions (a)	Identification		Mineral C	lass (b)		Mineral	EDXA		1 = ye	s, blank	= no	CH Not
			Primary	Total	Length	Width		ĻA	OA	СН	NAM	Desc (c)	Obs (d)	Comments	Sketch	Photo	EDS	CH Not Counted (e)
02	D2	ND		11.	1					<u> </u>						T		T
02	D4	ND						1.1										
02	D6	ND				A 15 CH 12 C				a								
02	D8	ND			V 5 3 4	8.69	4,24,112		1		1 7 7							
02	D10	ND		1 1 72.	100	a 11 a	24 17 17 17							***************************************		· · · · · ·		
02	E1	ND													· · · · · · · · ·	<del> </del>		<del></del>
02	E3	ND							T							<del> </del>		<del> </del>
02	E5	ND	100	10						14.1						<b></b>		<del></del>
02	E7	ND			77				1.7						<del> </del>			<del></del>
02	E9	ND			2.0			-				<del> </del>			<del> </del>		<del></del>	
02	F2	ND								-					+			<del></del>
02	F4	ND													+			<del> </del>
02	F6	ND	177		-	<b>—</b>									-			
02	F8	ND			<del> </del>			-	-						-			
02	F10	ND			-												ļ	
02	G1	ND												·				
02				<del> </del>				4			1							
02	G3	ND ND			-					ļ								
02	G5	ND	- 4				4 1 48 2 77 7											
02	G7	ND				7 1 2				5		1.	1 1					
02	G9	ND			1													
02	H2	ND	1.7		1000	4		- 1	. 11									
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02	H8	ND	1.00	1.1					1.0						<b>—</b>		-	
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02	11	ND	100						-			-			<del> </del>	<del> </del>		
02	13	ND			7			-		_					<del> </del>		ļi	
02	15	ND			7.									<del></del>	<del></del>			<del> </del>
02	17	ND													ļ			
02	19	ND			-			·							ļ			
04	B2	ND				<b></b>												<b>_</b>
04	B4	ND ND													ļ			
															1			
04	B6	ND ND										<u> </u>						
04	B8	ND						1.										
04	B10	ND			6	10000					9 4 2							
04	C1	ND	2.1			71 19 19		1000		1.	1.0							
04	C3	ND								4.								
.04	C5	ND					and the second	2 2			7							
04	C7	ND	1 2 2 2		100		British Commencer	100							<del> </del>			
04	C9	ND	1 2 2	3.11		11.75				-	2 7 1				† · · · · · · · · · · · · · · · · · · ·			
04	D2	ND	1.7									T:			1			i
04	D4	. ND	i Swyddi		5.5					-					<del>                                     </del>			·
04	D6	ND				J. 18.	7 7 7 7 7		. 7						<del> </del>			
04	D8	ND	1.07	Jan 1844 J. T		200 000									<del>                                     </del>	-		
04	D10	ND						· .						· · · · · · · · · · · · · · · · · · ·	<del> </del>			
_04	E1	ND				-								· · · · · · · · · · · · · · · · · · ·	-			
04	E3	ND									-	<del></del>		<u> </u>	<del> </del>			<b></b>
04	E5	ND	7.7		-					·					ļ	<b>  </b>		<del> </del>
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								1.0 L 1.1						····				
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04	G5	ND		- 12														
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#### LIBBY

### TEM Asbestos Structure Count -- ISO 10312

EPA Sample Number	BA-00050	PARAMETERS	
Tag	AL1	Effective filter area	385.0 mm2
Status	ANALYZED	F factor	1.00E+00
Lab QC Type	Recount Same	Number of Grid Openings (amphibole)	10
Lab Sample Number	271300245-0005	Number of Grid Openings (chrysotile)	10
Matrix	Air	Grid opening area	0.013 mm2
Category	Field	Volume (L) or Area (cm2)	806 L
Prep	Direct	Sensitivity (amphibole)	3.67E-03 s/cc
Analysis Method	TEM-ISO	Sensitivity (chrysotile)	3.67E-03 s/cc
Est. Particulate Loading	4%	Area Examined (amphibole)	0.130 mm2
	<del></del>	Area Examined (chrysotile)	0.130 mm2

Magnification: LOW

Recording	Min AR	Min length (um)	Min width (um)	Stop
Rules:	3:1	5	0.25	Rul

Stopping	
Rules	L

Target Sens.	Max AE (mm²)	Max N LA
0.0009	10.000	25

COUNTS (based on countable structures only)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0	0	0	0

CONCENTRATION (s/cc)

Bin	LA	OA	СН	All Asbestos
Total				
PCME	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Total: Length > 0.5 um, Aspect Ratio >= 3:1

PCME: Length > 5 um, Width >= 0.25 um, Aspect Ratio >= 3:1

Chi-sq test for filter loading --

p value: 1.0E+00

interpretation: OK

FII	F	N/	ME	•

Category

OU6-052013 BA-00050 271300245-0005 TEM-ISO AR 06-17-13 D RS C0.xlsm

LIBBY

**TEM Asbestos Structure Count** 

	,	
FILE TYPE:	Original	•

#### Stonning Bulger

QIII,	rioles.	otopping itu	<del>[5.</del>
•	Minimum Aspect Ratio	0.00090	Target Sensitivity
0	Minimum Length (um)		GOs required to reach target

0.25	Minimum	Width (	(um)

Maximum Area 10.000 Examined (mm<sup>2</sup>) GOs required to 770 reach max area

#### F-factor Calculation:

Recording Rules:

Maximum # of 25 Structures Estimated # of GOs 41 required

#### Indirect Prep Inputs

Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

#### Input for Ashing of Secondary Filter

Fraction of secondary filter used for ashing

F-factor
r-ractor

Grid opening traverse direction:	V
----------------------------------	---

#### Supplemental Air Analysis

Check box if supplemental analysis

Achieved sensitivity (cc-1) from the original analysis

Note: When the box is checked above, the est. # of GOs required that is calculated will automatically take into account the GOs examined during the original analysis.

#### EPA Sample Laboratory ID: EMSL27 BA-00050 Tag AL1 Number: Instrument ID OL 100 CX II (27-2) Matrix Air volume (L), dust sample area (cm²), or Voltage (KV) 100 806 dustfall container area (cm²): Magnification 4.800 LOW Date received by lab 5/21/2013 (do not include X) Grid opening area (mm²) 0.0130 Lab Job Number: 271300245 Scale: 1L = Lab Sample Number: 271300245-0005 1.000 Scale: 1D = 1.000 Number of grids prepared 10 Primary filter area (mm²) 385.0 Prepared by (e.g., M. Smith) D. Barney Preparation date Secondary Filter Area (mm²) 360.0 6/10/2013 EPA COC Number Field OU6-052013 • Filter Status ANALYZED Estimated Particulate Loading (%) 4%

Analyzed by (e.g., M. Smith) E. Wyatt-Pesca			
Analysis date	6/17/2013		
Prep	Direct		
If sample type = air, is there loose material or debris in the cowl?	No 🔻		
Analysis Method	TEM-ISO		
Analysis Method SOP	ISO 10312		
Grid storage location	2713-LIB-53		
Archive filter(s) storage location	Cinnaminson		
F- factor			
Lab QC Type	Recount Same		

OMMENTS	

# LIBBY TEM Asbestos Structure Count

 ${\tt OU6-052013\_BA-00050\_271300245-0005\_TEM-ISO\_AR\_06-17-13\_D\_RS\_C0.xism}$ 

EPA SAMPLE ID: BA-00050 LAB SAMPLE ID: 271300245-0005	Matrix Air Analysis Method TEM-ISO	Prep Direct QC Type RS	ERROR CHECK OK - No errors found
Data Entry by (e.g., M. Smith)  A. Fearfield  Data Entry date 7/2/2013	QA by (e.g., M. Smith) M. Smollock QA date 7/2/2013		

Grid	Grid	Structure	No. of S	tructures	Dimens	sions (a)	14-46-46-		Mineral C	lass (b)		Mineral	EDXA		1 = 1/4	s, blank	= 00	
	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН		Desc (c)	Ohs (d)	Comments	Sketch	Photo		CH Not Counted (e)
11	A1	ND	5 5 5 5 5	1.0		1. N. W. M.	45, 4 5 4 1 1/		1	-		10000	000 (0)	I Sommer and the second	-	1		Conlited (e)
	A3	ND		17 11 77	119 410					7-11			198					
11	A5	ND		44 ( 1	100				25 5.00	1.1	100					-		
1	A7	ND		7 1 2 4 5	44 14 77	WORK ST					-				-			
11	A9	ND	Andrews		81 ( V) ( ) ( )	25 34	7 - 1 - 7 - 3				7.77					-		
13	B1	ND			3 4 5 3 3 4 5 5	A-12 1827	920 50 50 50 50 50	1 4 4 4 6		1.0	3.7.1.7		-					
13	B3	ND		100 St. 100 St.	3-45-50-25-	1800	2 Sec. 9 1 1, 44				-							
13	B5	ND	71 july 1		17 1 17	7 - 3/0 - 8				7 7 7								
13	B7	ND	1.4	4 4	100					-	26.5				-	<b></b>		
13	89	ND					77.		<del> </del>	<del></del>	<del> </del>				<del>                                     </del>			

Mineral Class (see below)

СН

OA

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag	4800 HIGH
Grid opening are (mm2)	a 0.013
Scale: 1L =	1
Scale: 1D=	
Primary filter are (mm2)	a 385
Secondary Filter Area (mm2)	360
Category (Fi <b>eld</b> , Blank)	Field
Primary filter por size (um)	<b>e</b> 0.8

Grid

Opening

BS

BY

BG

Grid

Structure

Туре

W

ND

NO

W

EPA Sample Number:	BA-00032	Tag:	AL1		
Matrix (A=Air, D= Dustfall):	Dust, DF =		Α		
Air volu <b>me (L)</b> , du dustfall co <b>nta</b> iner	ust area (cm2), or area (cm2)		zoo 180		
Date received by	lab	5/	21/2013		
Lab Job Number		27	271300245		
Lab Sample Num	271300245-0001				
Number of grids	prepared	10			
Prepared by		D. Barney			
Preparation date		6/10/2013			
EPA COC Numb	er:	OU6-052013			
Secondary filter p	oore size (um)		0.2		

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/13/2013
Method (D=Direct, l=Indirect, lA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	5

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio	(circle one):
none €3	≥ 5:1
Minimum Length (um):	5
Minimum Width (um):	0.25

Stopping Rules:	
Target Sensitivity:	0.0009
Max Area Examined:	10
Target # of Structures:	25
	. <del></del>

#### F-factor Calculation:

CH Not

Counted

Indirec	t Prep Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary fitte (mL) or used for serial dilution

Inputs for	Serial Dilutions
	Second resuspension volume (mL
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

input for As	hing of Secondary Filter
	Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Y

Yes)	No	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Length Width

Analyzed by:				
Analysis date:	1.0			
Instrument:		 		

H Horizontal

Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 ≈ yes, blank = no

Photo

EDS

Sketch

		Achieved sensitivity (cc-1) fro	om the original analysi

271300245 Lab Job Number Lab QC Type Not QC EPA Sample Number BA-00032 Laboratory ID EMSL27 Grid Storage Loc. 2713-LIB-53 Analyst Name Matrix 271300245-0001 Α E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	ıl Class					1 = y	es, blank	= no	<b> </b>
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
۴۱	OS	ND																
	104	ND																
	06	m																
	08	NO																
	Ola	W																
	EI	ND																
	E3	WO																
	ES	Mo																
	ET	NO																
	Ed	WD																
	F2	ND																
	F4	ND																
	Flo	NO																
	FB	au																
	FIO	MD																

271300245 Lab QC Type Lab Job Number EMSL27 EPA Sample Number BA-00032 Not QC Laboratory ID 2713-LIB-53 Analyst Name Grid Storage Loc. Matrix Α 271300245-0001 E. Wyatt-Pescador Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	ensions	1.1. A15: A1		Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments		Photo	EDS	CH Not Counted
A3	A2	ND																
	AY	an																
	AL	NO																
	AB	W																
	AID	dN			140													
	BI	M											-				-	
	<b>B</b> 3	M																
	B5	ND																
	87	NO																
	Ba	W																
	CZ	M																
	C4	NA																
	Ch	MO															-	
	CB	ND																
	CID	MD																

Lab QC Type 271300245 BA-00032 Lab Job Number Laboratory ID EMSL27 EPA Sample Number Not QC Grid Storage Loc. 2713-LIB-53 Matrix Analyst Name 271300245-0001 Α Lab Sample Number E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	I Class					1 = y	es, blank	= no	
Grid	Opening	ening Type	Type Primary	Total	Length	Width	Identinoation	LA	A OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	DI	ND																
	03	No																
	25	MD																
	Га	aux															w-'- id tall'w	
	D9	NN																
	Ez	NO																
	E4	NO																
	Eb	NO																
	EB	NO																
	EID	an																
		COZ .																
		1	6/3/															
		ETER	1 Co	2														

Mineral Class (see below)

OA

СН

NAM

Laborator	y 1D:	EMSL27					
Instrumen	t ID	JEOL 100 CX II (27- 2)					
Voltage (F	(V)	100					
Mag.	48	00 HIGH					
Grid open (mm2)	ing area	0.013					
Scale: 1L	=						
Scale: 1E	) =						
Primary fil (mm2)	ter area	385					
Secondar Area (mm		360					
Category Blank)	(Field,	Field					
Primary fi size (um)	ter pore	0.8					

Structure

Type

ND

W

ava

WO

Grid

Opening

AZ

A6

<u> 190</u> 181

Grid

EPA Sample Number:	BA-00033	Tag:	AL1				
Matrix (A=Air, D=I Dustfall):	Oust, DF =	A					
Air ∨olume (L), du dustfall container		658					
Date received by	5/	21/2013					
Lab Job Number:	271300245						
Lab Sample Num	ber:	271300245-0002					
Number of grids p	prepared		10				
Prepared by		D.	Barney				
Preparation date	6/10/2013						
EPA COC Numbe	er:	OU6-052013					
Secondary filter p	0.2						

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/13/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	4

#### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio (c	ircle one):
none	) ≥ 5:1
Minimum Length (um):	5
Minimum Width (um):	0.25

Stopping Rules:	
Target Sensitivity	0.0009
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

Indirect Pre	p Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustrall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (mi
	Volume applied to secondary filte (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary fite (mL)

Input for As	Input for Ashing of Secondary Filter										
	Fraction of secondary fifter used for asking										

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length Width

No. of Structures

Total

Primary

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one)

Yes	No	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:				111		
Analysis date:						_
instrument:						

Grid opening	traverse	direction	(circle	one)
--------------	----------	-----------	---------	------

H Horizontal
Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

EDS

Sketch

Achieved sensitivity (cc-1) from the original analysis

Lab QC Type 271300245 BA-00033 Not QC Lab Job Number Laboratory ID EMSL27 EPA Sample Number 2713-LIB-53 Matrix Analyst Name Grid Storage Loc. Lab Sample Number 271300245-0002 Α E. Wyatt-Pescador

	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	ıl Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		loentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
CI	C2	ND																
	C4	ND																
	CO	NO																
	CB	ND																
	CIO	ND															-	
	DI	au																
	D3	an																
	705	au																
	70	no																
	pa	no																
	EZ	MD																
	E4	NO																
	Elo	MD																
	E8	ND																
	E10	no																

271300245 Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00033 Not QC Lab Job Number 2713-LIB-53 Matrix Α Analyst Name Grid Storage Loc. 271300245-0002 E. Wyatt-Pescador Lab Sample Number

			·					<u> </u>										
Grid	Grid Opening	Structure Type	No. of Str			nsions	Identification			Class		Mineral				es, blank		CH Not
	77		Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
<u>C3</u>	BZ	ND																
	BY	NO											•					
	86	an																
	BB	po																
	BID	na																
	CI	auk																
	C3	aw				·										_		
	C5	an														_		
	C7	au				~												
	Ca	NO																
	DZ	WO																
	Pa	ND																
	06	WD																
	200	ND																
	DID	WO																

Laboratory ID EMSL27 EPA Sample Number BA-00033 Lab QC Type Not QC Lab Job Number 271300245

Lab Sample Number 271300245-0002 Matrix A Analyst Name E Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

0	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = ye	= no		
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
C3	E1	MO																
	E3	aw								ļ								
	65	W																
	E7	m					_											
	E9	N/P																
	FZ	No																
	F4	MO																
	FU	WD																
	FB	ND																
	F10	No																
	61	ND														-		
	63	NO																
	65	ayı																
	67	NO																
	69	avy											<u></u>					

Mineral Class (see below)

СН

NAM

OA

LA

Laborator	/ ID:	EMSL27
Instrumen	t ID	JEOL 100 CX II (27- 2)
Voltage (k	(V)	100
Mag.	48	000 HIGH
Grid open (mm2)	ing area	0.042
Scale: 1L	=	1
Scale: 1D	) =	1
Primary fi (mm2)	lter area	385
Secondar Area (mm		360
Category Blank)	(Field,	Field
Primary fi size (um)	iter pore	0.8

Grid

Opening

AI

A7

Grid

61

Structure

Type

an

W

DN

W

W

W

EPA Sample Number:	BA-00040	Tag: AL1						
Matrix (A≂Air, D=D Dustfall):	Dust, DF =	A						
Air volume (L), dus dustfall container a		780						
Date received by l	5/	21/2013						
Lab Job Number:		27	271300245					
Lab Sample Numb	per:	271300245-0003						
Number of grids p	repared		10					
Prepared by		D.	D. Barney					
Preparation date	6/	10/2013						
EPA COC Numbe	r:	OU6-052013						
Secondary filter po	ore size (um)	0.2						

Identification

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/13/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	Ч

F-Factor Calculation (Indirect Preps Only):

**EDXA** 

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules:	
Minimum Aspect Ratio (circ	cle one):
none	) ≥5:1
Minimum Length (um):	5
Minimum Width (um):	0.25

Stopping Rules	
Target Sensitivity:	0.0009
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

Indirect Prep Inputs
Fraction of primary filter used for Indirect prep or ashing

Indirect prep or ashing

[For dust and dustall, enter 1.0]

First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Inputs for Serial Dilutions

Second resuspension volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one)

"(	Yes	) <sup>№</sup>	)	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

No. of Structures

Total

Primary

Dimensions

Width

Length

Analyzed by:				
Analysis date:		43.43		
instrument:				41 <u>. 11. 11. 11. 1</u>

Grid opening traverse direction (circle one	a):
---------------------------------------------	-----

H Horizontal
Vertical

SUPPL	EMENTAL	AIR AN	ALYSIS
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1 = yes, blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc.1) from the original analysis

271300245 EPA Sample Number BA-00040 Lab QC Type Not QC Lab Job Number Laboratory ID EMSL27 Lab Sample Number Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-53 271300245-0003 E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
EI	CI	NO																
	C3	ND															_	
	CS	ND																
	C7	ON/	-												,			
	C9	on a																
	02	1/0																
	40	OW																
	00	NO																
	DB	WD				***************************************												
	010	aN																
	EI	ND																
	E3	NO																
	ES	ND																
	E7	4/0																
	E9	ND																

Lab QC Type EPA Sample Number BA-00040 Not QC Lab Job Number 271300245 Laboratory ID EMSL27 271300245-0003 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-53 Lab Sample Number E. Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDX <u>A</u>	Sketch/Comments	Sketch			CH Not Counted
E3	A2	an																
	AY	aw																
	AG	M																
	AB	WO																
	AIO	avi																
	Ві	W																
	B3	ND																
	B5	ND																
	B7	NO																
	B9	NO						·										
	CZ	OUY																
	C4	NO																
	Clo	מעו																
	CB	an															-	
	CW	M										_						

Lab Job Number

Grid Storage Loc.

271300245

2713-LIB-53

### LIBBY TEM Asbestos Structure Count\_Air-DustEDD\_38f

Laboratory ID EMSL27 EPA Sample Number BA-00040 Lab QC Type Not QC

Lab Sample Number 271300245-0003 Matrix A Analyst Name E, Wyatt-Pescador

	Grid	Structure	No. of Str	uctures	Dime	ensions			Minera	l Class					1 = ve	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
<i>E</i> 3	10	NO																
	03	gu																
	02	NO																
	79	NO																
	129	NO																
	E2	ON					_											
	EY	an																
	E6	NO																
	EB	NO														_		
	E10	NO																
	FI	MO																
	F3	m																
	PS	ND																
	F7	avi																
	Fg	QM																

Mineral Class (see below)

CH

OA

LA

Laboratory ID:	EMSL27						
Instrument ID	JEOL 100 CX II (27- 2)						
Voltage (KV)	100						
Mag. 16/13	HIGH LOW						
Grid opening area (mm2)	0.013						
Scale: 1L =	1						
Scale: 1D=	1						
Primary filter area (mm2)	385						
Secondary Filter Area (mm2)	360						
Category (Field, Blank)	Field						
Primary filter pore size (um)	0.8						

Grid

Opening

**B**3

B7

Grid

61

Structure

Type

ND

aur

MD

WD

Instrument:

No. of Structures

Total

Primary

EPA Sample Number:	BA-00041	Tag:	AL1	
Matrix (A=Air, D=E Dustfall):	Oust, DF =			
Air volume (L), du dustfall container a			718	
Date received by I	lab		/21/2013	
Lab Job Number:		27	UiT	
Lab Sample Numi	ber:	27 2713	פיונינ	
Number of grids p	prepared			
Prepared by		۵		
Preparation date		6	/10/2013	
EPA COC Numbe	er:	οι		
Secondary filter p	ore size (um)		0.2	

Identification

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/14/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	4

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules	7
Minimum Aspect Ratio (circle one):	
none (≥3.1) ≥ 5:1	
Minimum Length (um): 5 e-e-	ms
Minimum Width (um): 125 Hone	ליובוד"

0.0009
10
25

#### F-factor Calculation:

CH Not

Counted

Indirect Prep Inputs Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0] First resuspension volume or rinsate volume (mL)

> Volume applied to secondary filter (mL) or used for serial dilution

nputs for S	erial Dilutions
	Second resuspension volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Horizontal

Grid opening traverse direction (circle one):

Are prepped grids acceptable for analysis? (circle one) Yes No If No, explain:

es	NO	

Analyzed by: Analysis date:

SUI	PP	LEM	EΝ	TAL	AJR	ANAL	YSI.

1 = ves. blank = no

Photo

Sketch

EDS

Achieved s	ensitivity (cc <sup>-1</sup>	) from the	original	analysis

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Dimensions

Width

Length

Vertical

43

IS:

271300245 Lab Job Number Lab QC Type Not QC EPA Sample Number BA-00041 EMSL27 Laboratory ID 2713-LIB-53 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Matrix Α 271300245-0004 Lab Sample Number

	0-14	Structure	No. of Str	uoturae	Dime	nsions		Literation		l Class					1 = yes, blank = no			
Grid	Grid Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
61	O	NO																
	03	au																
	D5	ND																
	רס	ND																
	09	NO																
	EZ	ND																
	E4	ND											_			_		
	Elo	au											_					-
	E8	ND						ļ			<u> </u>							
	EID	NO									ļ							
	FI	ND														-		
	F3	NO																
	F5	NO																
	F7	ND																
	F9	NO																

271300245 Lab Job Number Lab QC Type Not QC EPA Sample Number BA-00041 EMSL27 Laboratory ID 2713-LIB-53 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Matrix Α 271300245-0004 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsions	1.1416141		Minera	l Class					1 = y	es, blank	= no	CH Not
Grid	Opening	Type	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	
63	A١	W																
	<b>1</b> 93	an																
	A5	au																
	A7	ND											<u></u>			-		<u> </u>
	A9	an	-															<del> </del>
	B2	an																ļ
	84	an																<del>                                     </del>
	Bb	WD									-							
	BB	ND													-			
	BIO	ND														ļ		
	CI	an								ļ					_			
	C3	ND														-		_
	C5	NO								ļ			-			-		
	C7	au														-		
	<u>C9</u>	an																

271300245 Lab Job Number Lab QC Type Not QC BA-00041 **EPA Sample Number** Laboratory ID EMSL27 2713-LIB-53 Grid Storage Loc. Analyst Name E. Wyatt-Pescador Matrix Α 271300245-0004 Lab Sample Number

	Grid	Structure	No. of Str	uctures	Dime	nsio <b>ns</b>	Identification		Minera	l Class					1 = yes, blank = no			-
Grid	Opening	Туре	Primary	Total	Length		Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
63	2	an																
	04	M/2_																
	D6	ND_																
	08	ND																
	DID	MD														-		
	E2	ND																
	E4	au																
	Elo	100																
	£8	aur																
	E10	ND																
															<u></u>	-		-
			W.C.	lui														
			ETUP	1/2	12													

Mineral Class (see below)

OA

СН

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag. MS 4.8	HIGH LOW
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D=	
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8

Grid

Opening

A3

Grid

Structure

Type

NP

aw

ND

ND

ND

EPA Sample Number:	BA-00050	Tag:	AL1					
Matrix (A=Air, D=[ Dustfall):	Dust, DF =	A						
Air volume (L), du dustfall container a			806					
Date received by I	ab	5)	21/2013					
Lab Job Number:		27	1300745					
Lab Sample Numl	ber:	271300845-0005						
Number of grids p	prepared		10					
Prepared by		D	. Barney					
Preparation date		6	/10/2013					
EPA COG Numbe	er:	OU6-052013						
Secondary filter p	ore size (um)		0.2					

Identification

LA

Analyzed by:	E Wyatt-Pescador
Analysis date	6/14/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM- ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Intertab)	Not QC
Estimated Particulate Loading (%)	4

F-Factor Calculation (Indirect Preps Only):

EDXA

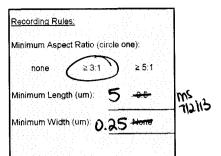
Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments



Stopping Rules:	
Target Sensitivity	0.0009
Max Area Examined:	10
Target # of Structures:	25
	· <del></del>

F-factor Calculation:

CH Not

Counted

Indirect Prep Inputs
Fraction of primary filter used for indirect prep or ashing
IFor dust and dustfall, enter 1.0]
First resuspension volume or rinsate volume (mL)

Volume applied to secondary filter (mL) or used for serial dilution

	,
Inputs for S	erial Dilutions
	Second resuspension volume (ml.
	Volume applied to secondary filter (mi.) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter (mL)
	-

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

136

OA = Other (non-Libby type) amphibole

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Ye

Yes	No	

4	If sample was analyzed by more than one analyst or across multiple analysis dates, enter
Ż	analysis details below.

No. of Structures

Total

Primary

Dimensions

Length

Width

Analyzed by:			
Analysis date:			- 447
Instrument:			

Grid openir	ng traverse	direction	(circle	опе):
Grid openir	ng traverse	direction	(circle	опе)

H Horizontal Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

Sketch

EDS

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

		EPA Sample Number BA-00050	Lab QC Type	Not QC	Lab Job Number	271300245
Laboratory ID	EMSL27	EPA Sample Number BA-0000	d Lab Qo Type			
Lab Sample Number	271300245-0005	Matrix A	Analyst Name	E. Wyatt-Pescador	Grid Storage Loc.	2713-LIB-53

	Grid	Structure	No. of Structures Dimensions			lalantification		Minera	I Class					1 = y	es, blank	= no	<u> </u>	
Grid	Opening	Туре	Primary			Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
ΙI	CI	_au																
	C3	au																
	C5	au																
	C7	an													ļ			
	C9	DU																
	02	ND																
	D4	an																
	Dle	an																
	DB	ND																
	010	ND																
	EI	ND																
	<i>E</i> 3	ND																
	€5	ND																
	67	avi																
	E9	NO																

271300245 Lab Job Number Lab QC Type Not QC EMSL27 EPA Sample Number BA-00050 Laboratory ID Grid Storage Loc. 2713-LIB-53 Matrix Α Analyst Name E. Wyatt-Pescador 271300245-0005 Lab Sample Number

0.11	Grid	Structure	No. of Structures Dimensions		Identification		Minera	l Class					1 = ye	es, blank	= no	<u> </u>		
Grid	Opening	Туре	Primary	Total	Length	Width	10311111041011	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo_	EDS	CH Not Counted
I3	A2_	an																
	A4	NO																
	ALO	WD																
	AB	NO																
	Ald	M																
	BI	MD																
	B3	M																
	B2	MD																
	87	NO																
	B9	an																
	C2	NO														_		
	C4	NO																
	Clo	ND																
	CB	ND																
	CIO	NO																

271300245 Lab QC Type Lab Job Number BA-00050 Not QC EMSL27 EPA Sample Number Laboratory ID 2713-LIB-53 Grid Storage Loc. Analyst Name E. Wyatt-Pescador 271300245-0005 Matrix Α Lab Sample Number

	Grid Opening	Structure	No. of Structures		Dime	nsions_	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid		Туре	Primary	Total	Length		, delitillodioli	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
I3	DI	NO																
	D3	an						!										
	DS	ND																
	07	an																
	D9	al																
	E2	ND																
	£4	an																
	EL	ND																
	€8	au																
	EID	ND																
			ERAP															
			ERIP	SIA	012													_

Mineral Class (see below)

СН

NAM

OA

Laboratory ID:	EMSL27							
Instrument ID	JEOL 100 CX II (27- 2)							
Voltage (KV)	100							
Mag. In 13	LOW LOW							
Grid opening area (mm2)	0.013							
Scale: 1L =	1							
Scale: 1D=								
Primary filter <b>area</b> (mm2)	385							
Secondary Filter Area (mm2)	360							
Category (Field, Blank)	Field							
Primary filter pore size (um)	0.8							

Grid

Opening

A4

AB

Alo

**B3** 

Grid

K2

Structure

Type

an

ND

ND

ND

MO

MD

ND

<u>an</u>

No. of Structures

Total

Primary

Dimensions

Length

Width

EPA Sample Number:	BA-00051	Tag:	AL1			
Matrix (A=Air, D=E Dustfall):		Α				
Air volume (L), dus dustfall container a	7	791				
Date received by I	<b>a</b> b	5/21	1/2013 mli			
Lab Job Number:		271300 <b>1</b> 45 <b>23</b>				
Lab Sample Numb	per:	271300B45-0006				
Number of grids p	repared	10				
Prepared by		D. Barney				
Preparation date	,	6/10/2013				
EPA COC Numbe	OU6-052013					
Secondary filter po	0.2					

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/14/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM- ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	4

#### F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Recording Rules.	
Minimum Aspect Ratio (circle one):	
none	
Minimum Length (um): 5 🎎	ms 712113
Minimum Width (um): 0.25 None	11010

Stopping Rules:	
Target Sensitivity:	0.0009
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

#### Indirect Prep Inputs

CH Not

Counted

indirect prep or ashing [For dust and dustrall, enter 1.0]
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filter (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (ml.)

Volume applied to secondary filter

(mL) or used for serial dilution

Third resuspension volume (mL)

Volume applied to secondary filter

Input for Ashing of Secondary Filter
Fraction of secondary filter used for ashing

LA = Libby-type amphibole

analysis details below.

OA = Other (non-Libby type) amphibole

If sample was analyzed by more than one analyst or across multiple analysis dates, enter

CH = Chrysotile

NAM = Non-asbestos material

Are preposed grids acceptable for analysis? (circle one You No, explain:

Grid opening traverse direction (circle one):	

Analyzed by:			
Analysis date:			
Instrument:			

Gna openin	ig traverse direction (circle one
	orizontal
(V) Ver	tica!

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

EDS

Sketch

i		
į	Achieved sensitivity (cc <sup>-1</sup> ) from the ong	inal analysi

Laboratory ID EMSL27 EPA Sample Number BA-00051 Lab QC Type Not QC Lab Job Number 271300245 Matrix Analyst Name Grid Storage Loc. 2713-LIB-53 Lab Sample Number 271300245-0006 Α E. Wyatt-Pescador

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions .	Identification		Minera	al Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width	dentinoation	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
K2	C2	NO																
	CY	ND															· · · · · · · · · · · · · · · · · · ·	
	Clo	NO																
	CB	NO																
	CID	au																
	01	ND																
	D3	W																
	DS	W																
	70	NO																
	Pa	NO																
	E2	ND																
	E4	WD																
	66	ND																
	68	ND																
-	£10	ND																

BA-00051 Laboratory ID EMSL27 EPA Sample Number Lab QC Type 271300245 Not QC Lab Job Number 271300245-0006 Α Lab Sample Number Matrix Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

	Grid	Structure	ructure No. of Structures		Dimensions				Minera	l Class					1 = yes, blank = no			
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch			CH Not Counted
K4	B2	NO																
	BY	au																
	Blo	ND																
	BB	ND																
	BIO	ND																
	CI	Np																
	C3	ND																
	C5	ND																
	C7	ND																
	<u>C9</u>	ND																
	D2	NO																
	D4	ND																
	Db	ND																
	D8	NO																
	DID	NO																

Laboratory ID EMSL27 EPA Sample Number BA-00051 Lab QC Type 271300245 Not QC Lab Job Number Lab Sample Number 271300245-0006 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

<u> </u>	Crid	Structure Type	No. of Other Land				<u> </u>	······				Τ					Γ	
Grid	Grid Opening		No. of Str			nsions	Identification			l Class		Mineral				es, blank		CH Not
			Primary	Total	Length	Width		LA	OA	CH	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
K4	El	ND																
	E3	au																
	<i>ES</i>	MD																
	$\epsilon_{7}$	ND																
	E9	ND																
	F2	an																
	FY	aci		-														
	Flo	ND																
	FB	ND																
	FID	NO		-														
		ETZ	6/14/															
			6/14/	26														
				13		,												

Mineral Class (see below)

СН

NAM

OA

Laboratory ID:	EMSL27
Instrument ID	JEOL 100 CX II (27- 2)
Voltage (KV)	100
Mag. Mi 4 16	SOO HIGH
Grid opening area (mm2)	0.013
Scale: 1L =	1
Scale: 1D =	
Primary filter area (mm2)	385
Secondary Filter Area (mm2)	360
Category (Field, Blank)	Field
Primary filter pore size (um)	0.8
Grid	Structure No. of Structures

Grid

Opening

Grid

M2

Structure

Type

ND

Primary

Total

			_	
EPA Sample Number:	BA-00061	Tag:	AL1	
Matrix (A=Air, D=0 Dustfall):	Dust, DF =		V in the	
Air volume (L), du dustfall container a		60	30	
Date received by I	<b>a</b> b	5/21/	2013 00 <b>1</b> 45	617
Lab Job Number:		27130	00,45	~l13
Lab Sample Numb	per:	271300	45-000	, , ,
Number of grids p	repared	1	0	
Prepared by		D. Ba	arney	
Preparation date		6/10/	2013	
EPA COC Numbe	r:	OU6-0	52013	
Secondary filter po	ore size (um)	0	.2	

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/14/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
f sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	4

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Minimum Aspect Ratio	(circle or	ne):	
none	1)	≥ 5:1	
Minimum Length (um):	5	<del>-0.5</del>	n n
Minimum Width (um):	025	None	7

Stopping Rules:	
Target Sensitivity:	0.0009
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

#### Indirect Prep Inputs

CH Not

Counted

	Fraction of primary filter used for indirect prep or ashing [For dust and dustrall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
Ī	 Volume applied to secondary filte (mL) or used for serial dilution

#### Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (ml.)

Volume applied to secondary filter

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) (Yes) No If No, explain:

ne)	Ues)	NO	

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:			
Analysis date:			
Instrument			

Grid opening	traverse	direction	(circle	one):
One opening		4,, 000011	(0 0.0	0.1.07.



SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

EDS

Sketch

Achieved sensitivity (cc-1) from the original analysis

Laboratory ID EMSL27 EPA Sample Number BA-00061 Lab QC Type Not QC Lab Job Number 271300245 Lab Sample Number 271300245-0007 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification		Minera	el Class					1 = y	es, blank	= no	
<del></del>	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
M2	CI	aN																
	CB	NO																
	CS	ND																
	C7	ОИ																
	c9	NO				· · · · · · · · · · · · · · · · · · ·												
	02	W																
	Pa	WD																
	Dlo	W																
	89	ND				····												
	DID	an																
	EI	NO																
· · · · · · · · · · · · · · · · · · ·	E3	σW																
	F5	an																
	E7	WD																
	EG	NO																

Laboratory ID EMSL27 EPA Sample Number BA-00061 Lab QC Type Not QC Lab Job Number 271300245 Lab Sample Number 271300245-0007 Matrix Α Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

	Grid Opening	Structure	No. of Str		Dim								T		J GIIG SIGI			
Grid		Type	Primary	Total	Length	ensions Width	Identification			Class		Mineral				es, blank		CH Not
MY	00	ND	rimary	1 Otal	Length	vviatri		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
7119	A2										ļ <u>.</u>						<del></del> -	
	AY	WO																
	76 Plo	W																
	AB.	ND																
	AID	au																
	BI	ND																
	В3	NO																
	BS	NO																
	BI	MO																
	B9	MO																
	C2	NO			•													
	C4	ND																
	C6	au																
	CB	ND																
	CID	ND																

Laboratory ID EMSL27 EPA Sample Number BA-00061 Lab QC Type Not QC Lab Job Number 271300245

Lab Sample Number 271300245-0007 Matrix A Analyst Name E. wyatt-Pescador Grid Storage Loc. 2713-LIB-53

	T						1	I				<u> </u>						1
Grid	Grid Opening	Structure Type	No. of Str		Dime	ensions	Identification	[	Minera	l Class	r	Mineral			1 = y	es, blank	= no	CH Not
	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Primary	Total	Length	Width		LA	OA	СН	NAM		EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
MY	(0	WO																
	03	m				L												
	20	nvo_																
	07	an																
	109	MD																
	EZ	WD																
	EY	no																
	Eb	WO																
	EB	mo																
	EIO	MO																
MU	BI	m																
	<b>B</b> 3	mo										-	-					
	BS	MO																
	Zo	up 7/	, ,															
			12013					-										

# = Additional Grid openings analyzed on 7/1/2013

Mineral Class (see below)

СН

NAM

OA

	Grid	Structure	No. of Structures
Primary filte size (um)	er pore	0.	8
Category (F Blank)	ield,	Fie	eld
Secondary Area (mm2		36	80
Primary filte (mm2)	er area	38	35
Scale: 1D	=		
Scale: 1L=	=	1	
Grid openir (mm2)	ng area	<b>0</b> .0	13
Mag.	6 4,80 2113	×	LOW
Voltage (K\	/)	10	0
Instrument	IĎ	<b>JE</b> OL 100 2	The second second
Laboratory	ID:	EMS	L27

Grid

Opening

Structure

Type

DID WD

Primary

Total

EPA Sample Number:	BA-00062	Tag:	AL1	
Matrix (A=Air, D= Dustfall):	Dust, DF =		Α	
Air volume (L), du dustfall container	ust area (cm2), or area (cm2)		602	
Date received by	lab	5/2	21/2013	112
Lab Job Number:		271	1300 45 <b>(0</b> )	14)  }''
Lab Sample Num	iber:	27130		
Number of grids	prepared		10	
Prepared by	_	D.	Barney	
Preparation date		6/1	10/2013	
EPA COG Numb	er:	OU	6-052013	
Secondary filter p	oore size (um)		0.2	

Identification

LA

Analyzed by:	E.Wyatt-Pescador
Analysis date	6/14/2013
Method (D=Direct, l=Indirect, lA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM- ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interlab)	Not QC
Estimated Particulate Loading (%)	3

F-Factor Calculation (Indirect Preps Only):

EDXA

Mineral

Desc

Enter data in appropriate cells provided to the right---->

Sketch/ Comments

Minimum Width (um): C	<u>ں</u> کدر	Hone	71213
Minimum Length (um):	<b>_</b> _	<del>- 0.</del> 6	WC.
nohe (≥3:1		≥ 5:1	
Minimum Aspect Ratio (c	ircle or	ne):	
Recording Rules:			

Stopping Rules:	
Target Sensitivity:	0.0009
Max Area Examined	10
Target # of Structures:	25

F-factor Calculation:

Indirect	Prep	Inputs	

CH Not

Counted

Fraction of primary filter used for indirect prep or ashing 
First resuspension volume or rinsate volume (mL)
Volume applied to secondary filte

Inputs for Serial Dilutions

Second resuspension volume (mL) Volume applied to secondary filter (mL) or used for serial dilution Third resuspension volume (mL)

Volume applied to secondary filter (mL)

Input for Ashing of Secondary Filter Fraction of secondary filter used for

LA = Libby-type amphibole

OA = Other (non-Libby type) amphibole

Dimensions

Length

Width

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) If No, explain:

(es) No
---------

If sample was analyzed by more than one analyst or across multiple analysis dates, enter analysis details below.

Analyzed by:							
Analysis date:							
Instrument:	14,4	1.7		Т			

Grid opening	i traverse	direction	(circle	one)

Horizontal V Vertical

SUPPLEMENTAL AIR ANALYSIS:

1 = yes, blank = no

Photo

**EDS** 

Sketch

Achieved sensitivity (cc-1) from the original analysis

Lab QC Type Laboratory ID EMSL27 EPA Sample Number BA-00062 Not QC Lab Job Number 271300245 Lab Sample Number 271300245-0008 Matrix Α Analyst Name Grid Storage Loc. 2713-LIB-53 E. Wyatt-Pescador

	Grid	Structure	No. of Str	ructures	Dime	nsions	Identification Mineral Class								1 = v	es, biank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
02	FZ	ND																
	F4	au																
	Flo	NO																
	FB	ND																
	FID	100																
	61	au																
	63	NO				The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s												
	65	100																
	67	ND																
	69	ND																
	H2	an																
	144	ND																
	Hb	NO																
	HB	an																
	410	ND																

Laboratory ID	EMSL27	EPA Sample Number BA-00062	Lab QC Type	Not QC	Lab Job Number	271300245
Lab Sample Number	271300245-0008	Matrix A	Analyst Name	E Wyatt-Pescador	Grid Storage Loc.	2713-LIB-53

,	·				T									ster escado)				<u> </u>
Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width	, a change of	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
02	ΙΊ	ND																
	I3	DU																
	I5	ND																
	<b>17</b>	ND																
	I9	aw																
04	B2	MD																
	B4	ND																
	Blo	S																
	88	ND																
	Blo	ND																
	CI	ND																
	C3	ND																
	C5	ND																
	C7	an																
	C9	NO																

	LIBBY TEM Asbestos Structure Count_Air-Du	ustEDD_38f	Page <u>4</u> of <u>5</u>
Laboratory ID         EMSL27           Lab Sample Number         271300245-0008	EPA Sample Number BA-00062  Matrix A	Lab QC Type Not QC  Analyst Name E. Wyatt-Pescador	Lab Job Number 271300245  Grid Storage Loc. 2713-LIB-53

	Grid	Structure	No. of Str	ructures	Dime	nsions			Minera	ıl Class					1 = v	es, blan <u>k</u>	= 00	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch		EDS	CH Not Counted
04	02	ND																
	140	ND																
	D6	ND	:															
	D8	au																
	DIO	ND																
	EI	ND																
	E3	20																
	65	DU																
	ET	DU																
	E9	au																
	F2	NO																
	FY	ND																
	Flo	au													_			
	F8	ND														_		
	F10	ND																

Laboratory ID EMSL27 EPA Sample Number BA-00062 Lab QC Type Not QC Lab Job Number 271300245
Lab Sample Number 271300245-0008 Matrix A Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-53

Grid	Grid	Structure	No. of Structures		Dimensions		Identification	Mineral Class						1 = yes, blank = no				
Ор	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
04	61	NP																
	63	ND																
	65	ND																
	67	ND																
	69	au		-														
												·						
													-		· · · · · · · · · · · · · · · · · · ·			
	-		\$77		4/2013									***************************************				
·				6/	4/													
					( <del>2</del> /3													
			-															

Mineral Class (see below)

СН

OA



Laborator	y ID:	EMSL27	
Instrumen	t ID	JEOL 100 CX II (27- 2)	1
Voltage (F	(V)	100	
Mag. 4,80		X HIGH	Ms Ms
Grid open (mm2)	ing area	0.013	1
Scale: 1L	=	1	
Scale: 10	) =	1	
Primary fi (mm2)	lter area	385	
Secondary Filter Area (mm2)		360	
Category (Field, Blank)		Field	
Primary fil size (um)	ter pore	0.8	

Grid

Opening

Grid

I3

Structure

Туре

ND

W

NO

No. of Structures

Total

Primary

Dimensions

Width

Length

			_			
EPA Sample Number:	BA-00050	Tag:	AL1			
Matrix (A=Air, D=[ Dustfall):	Oust, DF =	А				
Air volume (L), du dustfall container a		306				
Date received by I	5/21/2013					
Lab Job Number:	271300245					
Lab Sample Numb	271300245-0005					
Number of grids p	repared	10				
Prepared by		D. Barney				
Preparation date	6/10/2013					
EPA COC Numbe	OU6-052013					
Secondary filter po		0.2				

Identification

LA

Analyzed by:	E Wyatt-Pescador
Analysis date	6/17/2013
Method (D=Direct, I=Indirect, IA=Indirect-ashed)	D
If sample type = air, is there loose material or debris in the cowl? (Yes, No)	No
Analysis Method (TEM-ISO, TEM-AHERA, TEM-ASTM)	TEM-ISO
Grid storage location	2713-LIB-53
Archive filter(s) storage location	Cinnaminson
Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verifled Analysis, Reconciliation, Lab Blank, Interlab)	Recount Same
Estimated Particulate Loading (%)	4

F-Factor Calculation (Indirect Preps Only):

EDXA

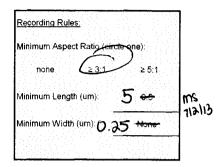
Mineral

Desc

NAM

Enter data in appropriate cells provided to the right---->

Sketch/ Comments



Stopping Rules:	
Target Sensitivity.	0.0009
Max Area Examined:	10
Target # of Structures:	25

#### F-factor Calculation:

CH Not

Counted

ED\$

Indirect	t Prep Inputs
	Fraction of primary filter used for indirect prep or ashing [For dust and dustfall, enter 1.0]
	First resuspension volume or rinsate volume (mL)
	Volume applied to secondary filter (mL) or used for serial dilution

Inputs for S	erial Dilutions
	Second resuspension volume (ml.
	Volume applied to secondary filter (mL) or used for serial dilution
	Third resuspension volume (mL)
	Volume applied to secondary filter

Input for Ashing of Secondary Filter								
	Fraction of secondary filter used for ashing							

LA = Libby-type amphibole

analysis details below.

61

B3

OA = Other (non-Libby type) amphibole

If sample was analyzed by more than one analyst or across multiple analysis dates, enter

CH = Chrysotile

NAM = Non-asbestos material

Are prepped grids acceptable for analysis? (circle one) Ves No If No, explain:

if No, explain:	•
	·····

Analyzed by:		11 / 10	
Analysis date:			
Instrument:			

Grid op	ening	trav	erse	direction	(¢ircle	one

H Horizontal

) Vertical

S	U	P	P	ĻĮ	E	VI	Ę	N	T	A	L	,	VI	₹	A	N	A	L	Υ	8	i	S	
			,							-													

1 = yes, blank = no

Photo

Sketch

Achieved sensitivity (cc<sup>-1</sup>) from the original analysis

### Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

### Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

Appendix B Database

Note: The Database is provided electronically

### Data Summary Report: Outdoor Activity-based Sampling Air Re-analysis Results

### Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

Appendix C Data Verification Report

### Data Verification Report: Outdoor Activity-based Sampling Air Re-analysis Results

### Libby Asbestos Superfund Site, Operable Unit 6 Libby, Montana

February 2014

Contract No. W9128F-11-D-0023 Task Order No. 0006

Prepared for:



# U.S. ENVIRONMENTAL PROTECTION AGENCY Region 8

Prepared by:



U.S. Army Corps of Engineers Omaha District Offutt AFB, Nebraska 68113

and



CDM Federal Programs Corporation 555 17th Street, Suite 1100 Denver, Colorado 80202

#### TEM CONSISTENCY REVIEW AND DATA TRANSFER VERIFICATION REPORT

Project/Dataset Description: Libby Asbestos Superfund Site, Operable Unit 6, Outdoor Activity-Based Sampling, Air Re-analysis Results

#### SUMMARY OF FINDINGS AND DATA QUALITY IMPLICATIONS

A verification of 10% of the OU6 ABS air sample analysis results by transmission electron microscopy (TEM) International Organization for Standardization (ISO) 10312 was performed. This verification effort was based on the Libby Scribe databases and the final laboratory reports as provided by TechLaw in accordance with Standard Operating Procedure EPA-LIBBY-9 (Revision 2).

One non-critical discrepancy was identified in which the laboratory job number was incorrectly transferred from the benchsheet to the EDD. This issue has been resolved by the analytical laboratory, the necessary corrections have been made to the EDD and the revised EDD has been loaded to the project database.

It was noted for one analysis that the laboratory examined adjacent grid openings beginning about midway through the analysis. As documented in Libby-specific laboratory modification LB-000016H, preferential selection of adjacent grid openings is permissible for analyses with greater than or equal to 50 grid openings. Because the laboratory examined over 200 grid openings in this analysis, there are no negative data quality implications.

The Data Verification Coordinator has performed a check of 5% of the analyses verified to ensure that any potential issues were identified correctly. No deficiencies were noted.

#### RECOMMENDATIONS FOR FUTURE REVIEW AND VERIFICATION

No critical issues where identified in this dataset, therefore, there is no need to perform future review or verification efforts for this dataset. In addition, there are no negative data quality implications because the issue discovered during the verification effort was non-critical in nature and has been resolved.

Data Verifier: Data Verification Coordinator:

Verification Data Manager\*:

Date: 2.25.14

Date: 2.25.14

Date: 2.25.14

#### ATTACHMENT 1A. DATA SUMMARY OF ANALYTICAL AND RESULT INFORMATION

51/5	Carrala	Fi	le						Analysis Ai	nalysis	lab lab		Nombre				D		Anabada	In	direct				Recording	Rules	Stoppi	g Rules	Grid Openings	Counted	STRUCTCNTPCI	ME	Sensitivity	S	STRUCTCONCPCME	E	de Pode Medi	lada Madila		Constitution
5%	Date Sai	np No Revi	sion Lab ID o	) Instru	iment Ma	ag Low GO S	ze EFA	Tag	Quantity	Jnits Receipt	Date Number	Lab SampleID	Grid Pres	) Name	Prep Date Analyst Nam	Analysis Dat	Method	Material	Method	Loading Pr	imary Al	iquot 1 Volume 1	F Factor	Analysis Comments	Min AR Min Ler Low Low	gth Min Wid	Target Sens Exam	Area Target N nined Strucs	LA/OA Low	hrys Low LA	OA	CH LA/0	A CH	LA	. OA I	Act CH	nieved Comp	pany Name	Comment e	Date
	9/17/2008 BA-0	00001	EMSL27	JEOL 100 C	X II (27-2)	4800 0.01	3 360	AL1	1,344	L 5/21/	2013 271300244	271300244-0001	10	E. Wyatt-Pesi	4/15/2009 E. Wyatt-Pescad	r 6/19/201	3 Indirect - A	s No	TEM-ISO	12	0.5	50 100	0.25		3:1 5	0.25	0.00040	0 25	210	210 0	0	0 0.00	39 0.0003	9 0	0	0 Sensit	ivity CDM S	imith N. Ross	Verifier's note: Lab examined adjacent grid openings, beginning about half way through the analysis.	
EF	9/23/2008 BA-0	10041 1	EMSL27	JEOL 100 C	X II (27-2)	4800 0.01	3 385	AL1	718	L 5/21/	2013 271300245	271300245-0004	1 10	D. Barney	6/10/2013 E. Wyatt-Pescad	r 6/14/201	3 Direct	No	TEM-ISO	4			1	Correction 1 on 11/20/2013 to remove extra ""0"" from lab job number.	3:1 5	0.25	0.00090	0 25	50	50 0	0	0 0.00	82 0.0008	2 0	0	0 Sensit	ivity CDM S	imith N. Ross	Lab Job number is 271300245, not 2713000245 according to benchsheet.	11/22/2013

ATTACHME	NT 1B. DATA SUMMARY OF STRUCTURE INFORMA	ATION											T EDXA	Structure								
Samp No	StructureID	Row Index	Grid	Grid Opening B1	Structure Type	Primary	Total	Length	Width	AR	Mineral Class	Mineral Desc	Observatio n	Identificati on	Chrysotile Count	Low Mag	Structure Comment	Verifier's Company	Verifier's Name	Comment	Correction Date	DVC
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_1 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_2 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_3	2	A1 A1 A1	B3 B5	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith	N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_4 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_5 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_6	5 6	A1 A1	B7 B9 C2	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_7 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_8	7 8	A1 A1	C4 C6	ND ND										Yes Yes	Yes		CDM Smith				
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_9 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_10 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_11	9 10 11	A1 A1 A1	C8 C10 D1	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_12 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_13	12	A1 A1	D3 D5	ND ND										Yes Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_14 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_15	14 15	A1 A1	D7 D9	ND ND										Yes Yes	Yes		CDM Smith	N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_16 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_17 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_18	16 17 18	A1 A1	E2 E4 E6	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			-
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_19 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_20	19 20	A1 A1	E8 E10	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_21 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_22 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_23	21 22 23	A1 A1 A1	F1 F3 F5	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith	N. Ross N. Ross N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_24 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_25	24 25	A1 A1	F7 F9	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_26 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_27 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_28	26 27 28	A1 A1 A1	G2 G4 G6	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith	N. Ross N. Ross N. Ross			<u> </u>
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_29 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_30	29 30	A1 A1	G8 G10	ND ND										Yes Yes	Yes Yes			N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_31 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_32 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_33	31 32 33	A1 A1 A1	H1 H3 H5	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			<u> </u>
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_34 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_35	34 35	A1 A1	H7 H9	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_36 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_37 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_38	36 37 38	A1 A1	12 14	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_39 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_40	39 40	A1 A1	18 110	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_41 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_42 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_43	41 42 43	A1 A1 A1	J1 J3 J5	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_44 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_45	44 45	A1 A1	J7 J9	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_46 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_47 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_48	46 47 48	A3 A3 A3	A2 A4 A6	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith	N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_49 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_50	49 50	A3 A3	A8 A10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_51 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_52 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_53	51 52 53	A3 A3 A3	B1 B3 B5	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_indirect-Ashed_NotQC_TEM-ISO_53 271300244-0001_indirect-Ashed_NotQC_TEM-ISO_54 271300244-0001_indirect-Ashed_NotQC_TEM-ISO_55	54 55	A3 A3	B7 B9	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_56 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_57	56 57	A3 A3	C2 C4	ND ND										Yes Yes	Yes			N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_58 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_59 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_60	58 59 60	A3 A3	C6 C8 C10	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_61 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_62	61	A3 A3	D1 D3	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_63 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_64 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_65	63 64 65	A3 A3 A3	D5 D7 D9	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_66 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_67	66 67	A3 A3	E2 E4	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_68 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_69 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_70	68 69 70	A3 A3 A3	E6 E8 E10	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_71 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_72 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_73	71 72 73	A3 A3 A3	F1 F3 F5	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_74 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_75	74 75	A3 A3	F7 F9	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_76 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_77 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_78	76 77 78	A3 A3	G2 G4 G6	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross N. Ross N. Ross			<u> </u>
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_79 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_80	79 80	A3 A3	G8 G10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_81 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_82 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_83	81 82 83	A3 A3 A3	H1 H3 H5	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			<u> </u>
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_84 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_85	84 85	A3 A3	H7 H9	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_86 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_87 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_88	86 87 88	A3 A3	12 14 16	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_89 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_90	89 90	A3 A3	18 110	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_91 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_92 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_93	91 92 93	A3 A3 A3	J1 J3 J5	ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001 Indirect-Ashed NotQC TEM-ISO 94 271300244-0001 Indirect-Ashed NotQC TEM-ISO 95 273200244-0001 Indirect Ashed NotQC TEM-ISO 95	94 95	A3 A3	J7 J9	ND ND										Yes Yes	Yes Yes			N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_96 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_97 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_98	96 97 98	A5 A5 A5	A1 A2 A3	ND ND ND										Yes Yes Yes	Yes Yes Yes			N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_99 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_100	99 100	A5 A5	A4 A5	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_101 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_102 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_103	101 102 103	A5 A5 A5	A6 A7 A8	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
BA-00001 BA-00001	271300244-0001 Indirect-Ashed NotQC_TEM-ISO_104 271300244-0001 Indirect-Ashed NotQC_TEM-ISO_105 271300244-0001 Indirect-Ashed NotQC_TEM-ISO_106	104 105	A5 A5	A9 A10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_106 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_107 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_108	106 107 108	A5 A5 A5	B1 B2 B3	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_109 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_110	109 110 111	AS AS	B4 B5 B6	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_111 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_112 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_113	111 112 113	A5 A5 A5	B6 B7 B8	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_114 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_115	114 115 116	A5 A5 A5	B9 B10 C1	ND ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_116 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_117 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_118	117 118	A5 A5	C2 C3	ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001 Indirect-Ashed_NotQC_TEM-ISO_119 271300244-0001 Indirect-Ashed_NotQC_TEM-ISO_120 271300244-0001 Indirect-Ashed_NotQC_TEM-ISO_121	119 120 121	A5 A5 A5	C4 C5 C6	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith	N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_121 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_122 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_123	121 122 123	A5 A5 A5	C6 C7 C8	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith				
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_124 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_125	124 125	A5 A5	C9 C10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_126 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_127 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_128	126 127 128	A5 A5 A5	D1 D2 D3	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_129 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_130	129 130	A5 A5	D4 D5	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_131 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_132 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_133	131 132 133	A5 A5 A5	D6 D7 D8	ND ND ND										Yes Yes Yes	Yes Yes Yes		CDM Smith CDM Smith CDM Smith				
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_134	134	A5	D9	ND										Yes	Yes		CDM Smith				

ATTACHME	NT 1B. DATA SUMMARY OF STRUCTURE INFORMA	TION																				
Samp No	StructureID	Row Index	Grid	Grid Opening	Structure Type	Primary	Total		Width	ΔR	Mineral Class	Mineral Desc	Observatio	Identificati on	Chrysotile Count	Low Mag	Structure Comment	Verifier's Company	Verifier's Name	Comment	Correction Date	DVC
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_135	135	A5	D10	ND	Filliary	Total	Length	width	AK	Class	Desc	-	Oil	Yes	Yes	Comment	CDM Smith	N. Ross	Comment	Date	DVC
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_136 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_137	136	A5 A5	E1 E2	ND ND										Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_138 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_139	138	A5 A5	E3 E4	ND ND										Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_140 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_141	140 141	A5 A5	E5 E6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_142 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_143	142 143	A5 A5	E7 E8	ND ND										Yes Yes	Yes Yes		CDM Smith				
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_144 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_145	144 145	A5 A5	E9 E10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith				
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_146 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_147	146 147	A5 A5	F1 F2	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_148 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_149	148 149	A5 A5	F3 F4	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross		$\vdash$	
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_150 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_151	150 151	A5 A5	F5 F6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross		$\vdash \vdash \vdash$	
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_152 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_153	152 153	A5 A5	F7 F8	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_154 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_155	154 155	A5 A5	F9 F10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001 Indirect-Ashed NotQC TEM-ISO 156 271300244-0001 Indirect-Ashed NotQC TEM-ISO 157	156 157	A5 A5	G1 G2	ND ND										Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_158 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_159	158 159	A5 A5	G3 G4	ND ND										Yes	Yes Yes		CDM Smith	N. Ross			
BA-00001	271300244-0001 Indirect-Ashed_NotQC_TEM-ISO_160 271300244-0001 Indirect-Ashed_NotQC_TEM-ISO_161	160 161	A5 A5	G5 G6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_162 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_163	162 163	A5 A5	G7 G8	ND ND										Yes	Yes Yes		CDM Smith				
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_164	164 165	A5 A5	G9	ND ND										Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_165 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_166	166	A5	G10 H1	ND										Yes	Yes		CDM Smith	N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_167 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_168	167 168	A5 A5	H2 H3	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith				
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_169 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_170	169 170	A5 A5	H4 H5	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_171 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_172	171 172	A5 A5	H6 H7	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_173 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_174	173 174	A5 A5	H8 H9	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross		oxdot	
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_175 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_176	175 176	A5 A5	H10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross		$\vdash \exists$	$\vdash$
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_177 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_178	177 178	A5 A5	12	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross		H	
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_179 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_180	179 180	A5 A5	14	ND ND										Yes Yes	Yes Yes		CDM Smith				
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_181 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_182	181	A5 A5	16	ND ND										Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_183	183	A5	18	ND										Yes	Yes		CDM Smith	N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_184 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_185	184 185	A5 A5	19 110	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_186 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_187	186 187	A5 A5	J1 J2	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_188 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_189	188 189	A5 A5	J3 J4	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_190 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_191	190 191	A5 A5	J5 J6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_192 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_193	192 193	A5 A5	J7 J8	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross		$\vdash$	-
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_194 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_195	194 195	A5 A5	J9 J10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001 BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_196 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_197	196 197	A7 A7	A1 A2	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001 Indirect-Ashed NotQC TEM-ISO 198 271300244-0001 Indirect-Ashed NotQC TEM-ISO 199	198 199	A7 A7	A3 A4	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_200 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_201	200	A7 A7	A5 A6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_202 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_202	202	A7 A7	A7 A8	ND ND										Yes	Yes		CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_204	204	A7 A7	A9	ND										Yes	Yes		CDM Smith CDM Smith	N. Ross			
	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_205 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_206	205 206	A7	A10 B1	ND ND										Yes Yes	Yes Yes		CDM Smith				
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_207 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_208	207	A7 A7	B2 B3	ND ND										Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			
BA-00001	271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_209 271300244-0001_Indirect-Ashed_NotQC_TEM-ISO_210	209 210	A7 A7	B4 B5	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_1 271300245-0004_Direct_NotQC_TEM-ISO_2	2	G1 G1	B1 B3	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			EF EF
BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_3 271300245-0004_Direct_NotQC_TEM-ISO_4	3 4	G1 G1	B5 B7	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross		$\vdash \vdash$	EF EF
BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_5 271300245-0004_Direct_NotQC_TEM-ISO_6	5	G1 G1	B9 C2	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			EF EF
BA-00041 BA-00041	271300245-0004 Direct_NotQC_TEM-ISO_7 271300245-0004 Direct_NotQC_TEM-ISO_8	7 8	G1 G1	C4 C6	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			EF EF
	271300245-0004_Direct_NotQC_TEM-ISO_9 271300245-0004_Direct_NotQC_TEM-ISO_10	9	G1 G1	C8 C10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_11 271300245-0004_Direct_NotQC_TEM-ISO_12	11	G1 G1	D1 D3	ND ND										Yes	Yes Yes		_	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_13 271300245-0004_Direct_NotQC_TEM-ISO_14	13	G1 G1	D5 D7	ND ND										Yes	Yes		CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_15 271300245-0004_Direct_NotQC_TEM-ISO_16	15 16	G1 G1	D9 E2	ND ND										Yes Yes	Yes Yes		CDM Smith				EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_16 271300245-0004_Direct_NotQC_TEM-ISO_17 271300245-0004_Direct_NotQC_TEM-ISO_18	17	G1 G1	E4 E6	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_19	19	G1	E8	ND										Yes	Yes		CDM Smith	N. Ross			EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_20 271300245-0004_Direct_NotQC_TEM-ISO_21	20	G1 G1	F1	ND ND										Yes	Yes		CDM Smith				EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_22 271300245-0004_Direct_NotQC_TEM-ISO_23	22	G1 G1	F3 F5	ND ND										Yes	Yes		CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_24 271300245-0004_Direct_NotQC_TEM-ISO_25	24 25	G1 G1	F7 F9	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_26 271300245-0004_Direct_NotQC_TEM-ISO_27	26 27	G3 G3	A1 A3	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_28 271300245-0004_Direct_NotQC_TEM-ISO_29	28 29	G3 G3	A5 A7	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_30 271300245-0004_Direct_NotQC_TEM-ISO_31	30 31	G3 G3	A9 B2	ND ND										Yes Yes	Yes Yes		CDM Smith	N. Ross		oxdot	EF EF
BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_32 271300245-0004_Direct_NotQC_TEM-ISO_33	32 33	G3 G3	B4 B6	ND ND										Yes Yes	Yes Yes		CDM Smith				EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_34 271300245-0004_Direct_NotQC_TEM-ISO_35	34 35	G3 G3	B8 B10	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith	N. Ross N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_36 271300245-0004_Direct_NotQC_TEM-ISO_37	36 37	G3 G3	C1 C3	ND ND										Yes	Yes Yes		CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_38 271300245-0004_Direct_NotQC_TEM-ISO_39	38 39	G3 G3	C5 C7	ND ND										Yes	Yes		CDM Smith	N. Ross			EF EF
BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_40	40 41	G3	C9 D2	ND ND										Yes	Yes		CDM Smith CDM Smith	N. Ross			EF EF
	271300245-0004_Direct_NotQC_TEM-ISO_41 271300245-0004_Direct_NotQC_TEM-ISO_42	41 42 43	G3 G3	D4	ND										Yes Yes	Yes Yes		CDM Smith	N. Ross			EF
			G3	D6	ND ND				l						Yes Yes	Yes Yes		CDM Smith	N. Ross N. Ross			EF EF
BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_43 271300245-0004_Direct_NotQC_TEM-ISO_44	44	G3	D8																		
BA-00041 BA-00041 BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_43 271300245-0004_Direct_NotQC_TEM-ISO_44 271300245-0004_Direct_NotQC_TEM-ISO_45 271300245-0004_Direct_NotQC_TEM-ISO_46	44 45 46	G3 G3 G3	D10 E2	ND ND										Yes Yes	Yes Yes		CDM Smith CDM Smith				EF EF
BA-00041 BA-00041 BA-00041 BA-00041 BA-00041	271300245-0004_Direct_NotQC_TEM-ISO_43 271300245-0004_Direct_NotQC_TEM-ISO_44 271300245-0004_Direct_NotQC_TEM-ISO_45	44 45	G3 G3	D10	ND														N. Ross N. Ross N. Ross			

#### **ATTACHMENT 2 – TEM LABORATORY BENCHSHEETS**

			/			TE	EM Asbestos S	LIBI		r-DustE	DD_38f									
atory	D:	EMS	SL27 🗸		EPA Sam Number:	ple	BA-00001	Tag:	AL1 L		Analyzed	by:			E.Wyatt-Po	escador			Recording	Rules:
ment l	D	JEOL 100	CX II (27- 2)		Matrix (A= Dustfall):	Air, D=D	ust, DF =	ļ	`		Analysis	iate			6/19/	2013			Minimum A	spect Ratio (circle one):
e (K\	2		90		Air volum dustfall co		t area (cm2), or rea (cm2)	13	44 V		Method (i	D=Direct,	=Indirect	, IA=Indirect-ashed)	IA	V			none	≥3:1 ≥5:1
	4,80	x X	HIGH	\/	Date rece	ived by la	ib	5/21/	<sup>2013</sup> レ			type = air the cowl?		loose material or )	No	, 4	_		Minimum L	ength (um): 5 per
penir	ng area	0.0	013		Lab Job f	lumber:		27130	00244 🗸		Analysis 'ASTM)	Method (T	EM-ISO,	TEM-AHERA, TEM-	TEM-	iso 🗸			Minimum V	Vidth (um): 0.25 None
1L =	:		1		Lab Sam	ole Numb	er:	2713002	44-0001		Grid ston	age location	on		2713-LI	B-56				
1D:	=		1		Number o	of grids pr	repared .	1	0 V		Archive fi	lter(s) sto	rage loca	tion	ESAT A	rchive				
filte	er area	3	85		Prepared	by		E. Wyatt-	Pescador <b>U</b>	/	Lab QC Ty Different, Blank, inte	Re-prep, Ve	C, Recount	t Same, Recount lysis, Reconciliation, Lab	Not 0	oc	_		Stopping F	<u>Rufes:</u>
ary	Filter	3	60 U		Preparati	on date		4/15/	<sup>2009</sup> L			Particulate	Loading (9	%)	12	· L			Target Ser	sitivity: 0.0004
_	ield,	Fi	eld		EPA COO	Number		0412	2-003		F-Factor	Calculatio	n (Indired	ot Preps Only):					Max Area I	Examined: 10 L
/ filte m)	er pore	C	0.8		Seconda	y filter po	re size (um)	0	2					ppropriate cells provide	d to the righ	t>			Target # of	Structures: 25 (
T	Grid	Structure	No. of S	tructures	Dimer	sions	Identification	Mir	neral Class (	see belo	w)			Sketch/ Comments	1 = y	es, blank =	no no	GUN-4	F-factor Ca	alculation:
	Opening	Туре	Primary	Total	Length	Width	Igentification	LA	OA	CH	NAM	Mineral Desc	EDXA		Sketch	Photo	EDS	CH Not Counted	Indirect Pro	ep laputs Fraction of primary filter used for
	BI	NO																	1/2	Indirect prep or ashing [Foydust and dustfall, enter 1.0]
	ВЗ	aur																	1001	Pfrst resuspension volume or rinsate volume (mL)
	86	ND																	50	(mL) or used for serial dilution
	87	NO																	inputs for S	Serial Dilutions
+	89	NO	<del>  -</del> -																	Second resuspension volume (mL)
+	C2	au																		Volume applied to secondary filter (mL) or used for serial dilution
+	<u>C4</u>	100	<del> </del> -						<del> </del>											Third resuspension volume (mL)
+	Clo	NO																		Volume applied to secondary filter (mL)
+		† <u> </u>		<b> </b>															Input for A	shing of Secondary Filter
-	<u> </u>	NO		-					-			<b>†</b>							I I I I I I I I I I I I I I I I I I I	Fraction of secondary filter used to ashing
bby	-type ampl	1	OA	= Other (n	on-Libby t	ype) amp	hibole	CH = Chry	rsotile	NAM =	Non-asbe	stos mater	rial		Are preppe	-	eptable for	analysis? (c	ircle one) (Yes	S) No
		was analyz etails belov		than one a	naiyst or a	cross mul	ltiple analysis dat	es, enter			ning travers	e direction	(circle one	e <del>)</del> .						
	An	nalyzed by:	11.	4 .74	145 41.	J 1117			]	(C.)	Horizontel ertiden	ĺ			SUPPLEM	ENTAL AIR	ANALYS	<b>IS</b> :		
		alysis date:								~										

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LIB-56

0-14	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	DI	ND																
	103	MO	:															
	20	No																
	70	100																
	<b>P</b> 9	NO																
	EZ	ND													_			
	E4	M														-		
	EL	M																
	E8	Mo											ļ <u>-</u>					ļ
	EID	MO								<u>.</u>								
	FI	MO									<u> </u>					-		
	F3	wo					100											
	F5	NO																
	F1	No																
	Fa	M																

Laboratory ID EMSL27	EPA Sample Number BA-00001	Lab QC Type Not QC Lab Job Number	r 271300244
Lab Sample Number 271300244-0001	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc	2713-LIB-56

Grid	Grid	Structure	No. of Str	ructures	Dime	nsions	14		Minera	l Class					1 = yo	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	62	ND																
	64	NO																
	Glo	NO													·			
	68	an																
	GID	NO																
	HI	au															,_	
	H3	Mo															·	
	H5	aN																
	47	WD																
	H9	MO					·											
	I2	W																
	<b>1</b> 4	ND																
	IU	WO																
	IØ	ND																
	110	MO				-								·				

Laboratory ID EMSL27	EPA Sample Number BA-00001	Lab QC Type Not QC Lab Job Number	er 271300244
Lab Sample Number 271300244-0001	Matrix A	Analyst Name E. Wyatt-Pescador Grid Storage Loc	c. 2713-LIB-56

	Grid	Structure	No. of Str		Dima			l	Minera	l Class					1 = 1/4	es, blank	= 00	
Grid	Opening	Type	Primary	Total	Length	nsions Width	Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AI	Ji	aur																
	J3	ND																
	J5	ND			·									·.				
	57	an																
	J9	ND																
A3	A2	ND																
	AY	ND									ļ							
	A6	NO				_	-											
	A8	ND			:								ļ					
	AID	NO																
	BI	aN														-		
	<b>B</b> 3	ND													_			
	85	avr								<b></b>			_					
	87	m														_		
	B9	MD																

271300244 EPA Sample Number BA-00001 Lab QC Type EMSL27 Not QC Lab Job Number Laboratory ID Analyst Name E. Wyatt-Pescador Grid Storage Loc. 2713-LIB-56 271300244-0001 Matrix Α Lab Sample Number

Grid	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera	Class					1 = y	es, blank	= no	
Gild	Opening	Туре	Primary	Total	Length	Width	Identification	ĹA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	CZ	ND																
	C4	ND																
	ماع	NO															·	
	CS	aur															· -	
	CID	an																
	DI	NO															-	
	<i>D3</i>	on				,												
	DS	ND																
	77	no																
	<i>Pa</i>	100																
	EZ	NO																
	EY	NO										<u> </u>						
-	EG	100																
	EB	NO.																
	E10	NO																

Laboratory ID EMSL27	EPA Sample Number BA-00001	Lab QC Type	Not QC	Lab Job Number 271300244
Lab Sample Number 271300244-0001	Matrix A	Analyst Name		Grid Storage Loc. 2713-LIB-56

Grid	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
Gila	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	FI	ND																
	F3	ND																
	F5	NO																
	F7	NO																
	Fq	an																
	62	NO																
	G4	NO																
	66	au																
	68	no																
	GID	MO				}												
	HI	no																
	H3	ayı																
	<b>H</b> 5	ND																
	47	MD																
	Ha	no																

 Laboratory ID
 EMSL27:
 EPA Sample Number
 BA-00001:
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001:
 Matrix
 A
 Analyst Name
 E: Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-56

	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	-				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A3	IZ	ND																
	I4	au																
	Ib	ND																
	I8	ND																
	IIO	MD																
	Ji	au																. '
	<b>13</b>	aur																
	J5	an																
	J1	NO																
	19	no																
<b>A</b> 5	Al	an																
	A2	avı																
	A3	NO	·															
	AY	No																
	A5	mo																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-L18-56

0-14	Grid	Structure	No. of Str	uctures	Dime	ensions	Identification		Minera	l Class	•				1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A5	AL	ND																
	A7	aN																
	A8	an					_											
	199	an																
	AID	an																
	BI	NO																
	B2	ND																
	<b>B3</b>	WD																
	84	NO																
	BS	an																
	86	OU																
	B7	No										ļ						
	Bg	ND			<u> </u>													
	B9	NO											ļ					
	B10	NO																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 £ Wyatt-Pescador
 Grid Storage Loc.
 2713-LIB-56

	Grid	Structure	N= -6.05											<del></del>		<del></del>		
Grid	Opening	Type	No. of Str			ensions	Identification		Minera			Mineral				es, blank		CH Not
^-			Primary	Total	Length	Width		LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
A5	CI	no																
	CZ	MO																
	<u>C3</u>	MO																
	C4	NO		<u> </u>										_				
	CS	M																
	Clo	No												• .				
	C7	mo																
	CB	NO																
	C9	WO																
	CIO	NO																·
	(a)	au																
	D2	avi																
	D3	ND																
	рн	WD																
	DS.	מא																

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## LIBBY TEM Asbestos Structure Count\_Air-DustEDD\_38f

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E, Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-56

0-1-1	Grid	Structure	No. of Str	uctures	Dime	nsions	Identification		Minera						1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length		toentification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AS	200	an							.									
	m	ND				<u></u>												
	08	ND								•								
	DA	au																
	010	aw			,													
	EI	ND																
	E2	NO																
	E3	au																
	EY	aW.												-				
	E5	NO																
	66	WO															-	
	E7	NO													<u> </u>			
	68	ayı																
	Eq	aM																
	E10	m																

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# LIBBY TEM Asbestos Structure Count\_Air-DustEDD\_38f

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LIB-56

	01	04	41								•							
Grid	Grid Opening	Structure Type	No. of Str	Total		nsions	Identification		Minera		11444	Mineral	50V4		1	s, blank		CH Not
			Primary	lotat	Length	Width	<b>*</b>	LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
A5	FI	ND																
	F2	an		:														
	F3	an																
	F4	ND																
	F5	NO								,								
	F6	avı									:							
	F1	NO					,											
	F8	W																
	Fa	MO																
	FID	NO																
	61	W								, .								
	62	WD																
	63	MD																
	64	MO																
	65	MO																

271300244 EMSL27 BA-00001 Lab QC Type Not QC Lab Job Number Laboratory ID EPA Sample Number 2713-LIB-56 271300244-0001 E. Wyatt-Pescador Grid Storage Loc. Analyst Name Lab Sample Number Matrix Α

<u> </u>	Grid	Structure	No. of Str	ructures	Dime	ensions	14		Minera	l Class	•				1 = y	es, blank	= no	
Grid	Opening	Туре	Primary	Total		Width	Identification	LA	OA	сн	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
A5	Ole	ND																
	67	ND													Î <del> </del>			
	OB	au																
	69	an																
	610	avı																
	HI	ND																
	HZ	ON																
	HS	NO																
	H4	NO				·												
	H5	NO														-		
	H6	ND																
	H7	an													<u> </u>	-		
	H8	ND														ļ		
	Ha	Mp									ļ							
	H10	W																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-56

					T .	-·· ··· ···	1	· · ·			<del></del>		· · · · · · · · · · · · · · · · · · ·	·	,			<del>,</del>
Grid	Grid	Structure	No. of Str	ructures	Dime	ensions	Identification		Minera	l Class					1 = y	es, blank	= no	
	Opening	Туре	Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
AS	I1	ND																
	I2	<b>N</b> 0																
	<b>I</b> 3	M																
	I4	Wo																
	L2	OW																
	T6	au	-			· · · · · · · · · · · · · · · · · · ·												
	IT	W																
	I8	WO																
	I9	1/10												·				
	I10	avi																
	JI	1/0																
	52	αW																
	J3	No		<u> </u>														÷
	<i>J</i> 4	WD	•											4				-
	<b>55</b>	ayı																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-Lifb-56

											•				Γ		· · · · · · · · · · · · · · · · · · ·	T1
Grid	Grid Opening	Structure Type	No. of Str	uctures	Dime	nsions	Identification		Minera	Class		Mineral			1 = ye	s, blank	= no	CH Not
	Opering	туре	Primary	Total	Length	Width	-	LA	OA	СН	NAM	Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
A5	56	ND																
	51	ND																
	18	au																
	<i>J</i> 9	WO																
-	510	WD																
AT	Al	MO																
	A2	ND																
	<b>P3</b>	au																
	<b>P</b> 44	m					-											
	<b>A5</b>	an																
	A6	aw																
	A7	avı																
	AB	MD																
	Aa	NO	·											1			,,, ,	
	AIO	mo																

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00001
 Lab QC Type
 Not QC
 Lab Job Number
 271300244

 Lab Sample Number
 271300244-0001
 Matrix
 A
 Analyst Name
 E Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-56

	Grid Opening	Structure Type	No. of Str	uctures	Dime	nsions	Identification		Minera	i Class		1			1 = y	es, blank	= no	
Grid			Primary	Total		Width	identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH No Counte
<b>K</b> 7	ВІ	ND																
	BZ	au	,										-					
	63	au													-			
	вч	ND										ļ						
	85	an						<u></u>										
					· 										-			
·																		
																		-
					ETZ.										1			
					1	6/19/2												
							13											-
· · · · ·		<del> </del>	1															
· · ·			<del> </del>	1											1			
	<del>                                     </del>	1											\					

dustfall container  Date received by  Lab Job Number  Lab Sample Num	ust area (cm2), or area (cm2)	5/21	100 E45 2114	المامان	if sample	date	- ndirect		E.Wyatt-P 6/14/2				Recording Rules.				
Dustfail): Air volume (L), d dustfall container Date received by Lab Job Number Lab Sample Num Number of grids Prepared by	ust area (cm2), or area (cm2)	5/21	1/2013	المامان	Method (		- ndirect		6/14/2	2013							
Date received by Lab Job Number Lab Sample Num Number of grids Prepared by	r area (cm2) / lab	5/21	1/2013	1170	if sample	D=Direct,	I=Indirect						Minimum Aspect Ratio (circle one):				
Lab Job Number Lab Sample Num Number of grids Prepared by	nber:	17713	100 Ka 21 LA	الماراد		Method (D=Direct, I=Indirect, IA=Indirect-ashed)							none ≥3.1				
Lab Sample Nun Number of grids Prepared by	nber:	2713	300 45 214	1,110	Qeoris in	If sample type = air, is there loose material or gebris in the cow? (Yes, No)							Minimum Length (um): 5 e.e				
Number of grids Prepared by		271300			Analysis Method (TEM-ISO, TEM-AHERA, TEM					iso U			Minimum Width (um): 025 None				
Prepared by	prepared		271300745-0004   ASTM)  Grid storage location 2713-LIB-53														
ļ	Number of grids prepared				Archive filter(s) storage location  Lab QC Type (Not QC, Recount Same, Recount Different, Re-prep, Verified Analysis, Reconciliation, Lab Blank, Interiab)					ninson			ha — a said a si si si si si si si si si si si si si				
Preparation date		D. Barney U								oc	,		Stopping Rules:				
	6/10	)/2013 L	1		Particulate	Loading (	6)	4 1				Target Sensitivity: 0.0009					
EPA COC Numb	PA COC Number:		OU6-052013		E-Easter	-Factor Calculation (Indirect Preps Only):							Max Area Examined: 10				
Secondary filter	Secondary filter pore size (um)				r-ractor			propriate cells provide	d to the righ	nt>			Target# of Structures: 25 1				
s Dimensions	T	Mi	neral Class	(see belo	w)				1 = y	es, blank =	no		F-factor Calculation:				
Length Width	Identification	LA	OA	СН	NAM	Mineral Desc	ĘDXA	Sketch/ Comments	Sketch	Photo	EDS	CH Not Counted	Indirect Prep Inputs				
													Fraction of primary filter used for indirect prep or ashing [For dust and dustrall, enter 1.0]				
													First resuspension volume or rineate volume (mL)				
													Volume applied to secondary filter (mL) or used for serial dilution				
													Inputs for Serial Dilutions				
											-		Second resuspension volume (mL)				
			<del>                                     </del>										Volume applied to secondary filter (ml.) or used for serial dilution				
													Third resuspension volume (mL)				
<del>  </del>	<del> </del>		<del> </del>										Volume applied to secondary filter (ml.)				
+	+	<del>                                     </del>							-				[[[]				
		<u> </u>	-										Input for Ashing of Secondary Filter Fraction of secondary filter used for ashing				
(non-Libby type) am	phibole	CH = Chr	ysotile	NAM = 1	Non-asbes	tos mater	ial		Are prepped	grids accep	otable for a	nalysis? (ci	ircle one) (Yes) No				
									If No, explain	n:							
etails below.					Horizontal												
		<u> </u>	1	ヅ゚	orucal		٦	11	SUPPLEME	<u> </u>			1) from the original each min				
analys	st or across me	st or across multiple analysis date	st or across multiple analysis dates, enter		Grid oper	Grid opening traversi Horizontal Vertical	Grid opening traverse direction Horizontal Vertical	Grid opening traverse direction (circle slow) Horizontal Vertical	Grid opening traverse direction (circle diper.  H Horizontal  Vertical	Grid opening traverse direction (circle dow).  Horizontal  Vertical  SUPPLEME	Grid opening traverse direction (circle dopen).  Horizontal  Vertical  SUPPLEMENTAL AIR A	Grid opening traverse direction (circle dop)  Horizontal  Vertical  SUPPLEMENTAL AIR ANALYSIS  Achieved se	st or across multiple analysis dates, enter  Grid opening traverse direction (circle doop).  H Horizontal				

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00041
 Lab QC Type
 Not QC
 Lab Job Number
 271300245

 Lab Sample Number
 271300245-0004
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LiB-53

	Grid	Structure	No. of Str	uctures	Dime	nsions			Minera	l Class					1 = ye	es, blank	= no	
Grid	Opening	Туре	Primary	Total	Length	Width	Identification	LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	CH Not Counted
61	0)	NO																
	03	au														·		
	D5	ND														_		
	רם	ND																
	09	NO											_					
	EZ	ND																
	E4	ND								ļ			<u> </u>			-		
	Elo	au											ļ					
	€8	an														-		
	€10	NO											_					
	FI	ND													ļ		<u> </u>	
	F3	MD									-			<u> </u>	ļ			
	F5	NO																
	F7	NO						<u> </u>				-						
	Fg	NO										<u></u>						

 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00041
 Lab QC Type
 Not QC
 Lab Job Number
 271300245

 Lab Sample Number
 271300245-0004
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-L1B-53

	Grid Opening	Structure Type	No. of Str		Dime	nsio <b>ns</b>			Minera	l Class					1 = v	es, blank	= 00	
Grid			Primary	Total	Length		Identification	LA	OA	CH	NAM	Mineral Desc	EDXA	Sketch/Comments		L i	EDS	CH Not Counted
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 Laboratory ID
 EMSL27
 EPA Sample Number
 BA-00041
 Lab QC Type
 Not QC
 Lab Job Number
 271300245

 Lab Sample Number
 271300245-0004
 Matrix
 A
 Analyst Name
 E. Wyatt-Pescador
 Grid Storage Loc.
 2713-LtB-53

	Grid Opening	Structure Type	No. of Str	uctures	Dime	nsions	Identification		Minera	l Class					1 = y	CH Not		
Grid			Primary	Total	Length	Width		LA	OA	СН	NAM	Mineral Desc	EDXA	Sketch/Comments	Sketch	Photo	EDS	Counted
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